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American Society of Cinematographers

# AMERICAN CINEMATOGRAPHER

The Motion Picture CAMERA Magazine

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A.S.C.
See Page 488

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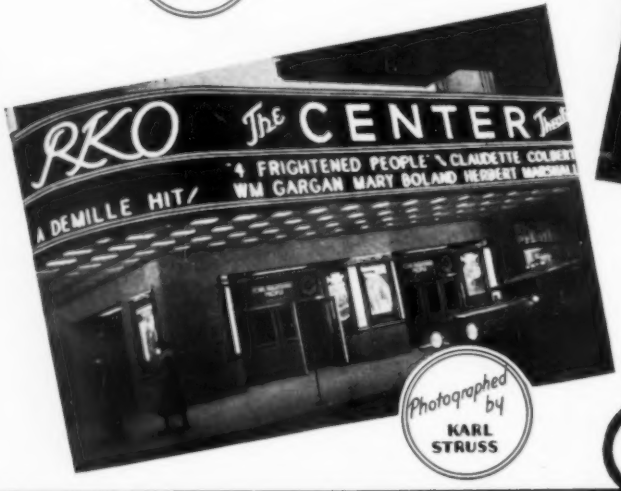


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of motion picture photography.

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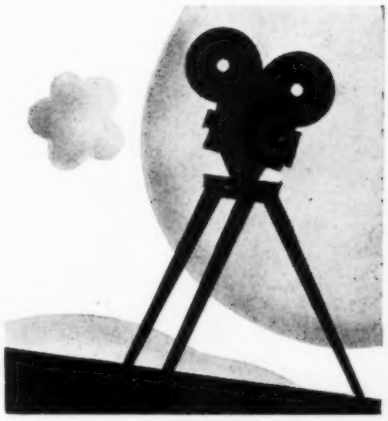

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- Fine Grain Developing for Dupes will be discussed by Hollis Moyse, A.S.C., and Fred Gage, A.S.C. The Paraphenylene formula will be the basis of this article.
- Infra Red in the air will be handled by Elmer Dyer, A.S.C., the foremost air cinematographer in the motion picture industry.
- A new Camera Crane and other technical subjects will be treated by members of the American Society of Cinematographers.

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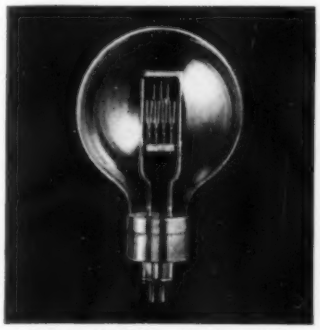

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Pollock, Gordon
Ries, Irving G.
Shearer, Douglas
Walker, Vernon L.
Williams, William N.
Wrigley, Dewey
Wimpy, Rex
Zech, Harry

### Second Cinematographers

Anderson, Don
Anderson, Wesley
Arling, Arthur E.
Badaracco, Jacob
Bader, Walter
Bell, Jack C.
Bennett, Guy M.
Bennett, Monroe
Bentley, Fred
Biroc, Joe
Blackstone, Cliff
Bradley, Wilbur H.
Chewning, Wallace
Clark, Roy
Clemens, Geo. T.
Cline, Wilfrid E.
Cohen, Edward J.
Collings, Russell D.
Cooper, Harry H.
Cortez, Stanley
Davis, Harry
Davis, Leland E.
Dean, Faxon
DeGrasse, Robert
Diamond, Jas. R.
Dunn, Linwood G.
Eslick, LeRoy
Fapp, Daniel L.
Feindel, Jckey
Fetters, C. Curtis
Fitzgerald, Edward
Freulich, Henry
Galezio, Len
Galligan, Thomas
Garnett, Paul
Gibbons, Jeff T.
Gordon, James
Gray, King D.
Green, Kenneth
Greenhalgh, Jack
Guffey, Burnett
Guthrie, Carl
Hallenberger, Harry
Harper, James B.
Henderson, Edward
Hoag, Robert
Huggins, L. Owens
Jennings, Lewis E.
Kaifer, Fred E.
Kershner, Glenn
Kornman, Anthony
Lane, Al L.
Lanning, Reggie
LaShelle, Joseph
Laszlo, Ernest
Lawton, Charles C., Jr.
Lindon, Lionel A.
Lyons, Edgar H.
Mayer, Fred
Mazorati, Harold J.
Meade, Kyme
Mellor, William C.
Merland, Harry
Metty, R. L.
Mels, Pierre M.
Newhard, Guy J.
Newhard, Robert S.
Nogle, George
Novak, Joe
Palmer, Robert
Pierce, Otto
Pittack, Robert
Pyle, Edward
Ramsey, Ray L.
Rand, William
Redman, Frank
Ries, Ray
Roberts, Josiah
Salerno, Charles, Jr.
Schoedsack, G. F.
Schuerich, Victor
Shipham, Bert
Smith, William Cooper
Snyder, Wm.
Stafford, Earl
Tappenbeck, Hatto
Thackery, Ellis F.
Thompson, Stuart
Titus, Frank
Travis, N. C.
Unholz, George
Vaughan, Roy V.
Van Dyke, Herbert
Van Enger, Willard
Vogel, Paul Charles
Vogel, Willard L.
White, Ben
Wild, Harry
Williams, Al E.
Williamson, James

### Assistant Cinematographers

Abbott, L. B.
Adams, Eddie
Ahern, Lloyd
Anderson, Eddie
Baldwin, Harold
Bergholz, Emmett
Bohny, Charles
Bourne, George
Bradford, William
Brandenburg, Gentry
Bridenbecker, Milton
Brigham, Donald H.
Bronner, Robert
Burgess, Frank
Burke, Charles
Burks, Robert
Carlos, Don
Carter, Ellis W.
Clothier William H.
Cohan, Ben
Cohen, Sam
Crawford, Lee
Cronjager, Henry, Jr.
Crouse, John
Curtiss, Judd
Daly, James
Dalzell, Arch R.
Davenport, Jean L.
Davis, Mark
Davol, Richard S.
Dawes, Harry
DeAngelis, Louis
deCanstellaine, Paul
Deverman, Dale
Diskant, George
Dodds, Wm.
Doran, A. Richard
Dorris, Joe
Dowling, Thomas L.
Dugas, Frank
Eagan, J. P.
Eckert, John
Etra, Jack
Finnerman, Perry
Fredericks, Ellsworth
Fischer, Herbert J.
Flinsky, Ray
Foxall, William
Garvin, Edward
Gaudio, Frank, Jr.
Geissler, Charles R.
Gertsman, Maury
Glassberg, Irving
Glouner, Martin
Gough, Robert J.
Graham, Stanley
Greer, John
Haas, Walter
Hackett, James C.
Haddow, Ledger
Harlan, Russell
Hayes, Towne D.
Higgins, James Colman
Hill, Paul
Hoffman, Roswell
Horsley, Davis S.
Ivey, Jesse F.
Jones, Edward C.
Kauffman, R. King, Jr.
Kearns, Edward
Keller, Alfred S.
Kelley, George F.
Kelly, William
Klein, Irving
Kluznik, Matt
Lane, Art
Lockwood, Paul
Love, Cecil
Lykins, Vollie Joe
Marble, Harry
Marsh, Harry
Martin, John
Molina, Lewis
Meade, Kenneth
MacDonnell, Stanley
McDonald, Frank
McEdward, Nelson C.
McIntyre, Andy
Noble, Roy
Norton, Kay
Orsatti, Alfred
Parkins, Harry
Riley, William
Ramsey, H. Clark
Rankin, Walter
Reinhold, Wm. G.
Roe, Guy
Sanford, S. A.
Schuch, William
Scheving, Albert
Sargent, Don
Shorr, Lester
Shirpser, C.
Slifer, Clarence
Sloane, James
Smith, H. C.
Southcott, Fleet
Starbuck, Charles
Stine, Clifford R.
Straumer, E. Charles
Strong, Glenn
Strong, William M.
Tolmie, Rod
Tripp, Roy
Ulm, William R.
Van Trees, James, Jr.
Van Warmer, John Pierce
Ward Lloyd
Weiler, John
Wellman, Harold
Wendall, Jack E.
Willard, Barth
Whitley, William
Worth, Lothrop

### Still Photographers

Allan, Ted
Alsop, George
Anderson, Bert
Bachrach, Ernie
Bjerring, Frank
Blanc, Harry
Breau, Joseph F.
Bredell, Elwood
Brown, Milton
Coburn, Robert
Cooper, John
Croneweth, W. E.
Ellis, John
Estep, Junius D.
Evansmith, Henry
Farrell, David H.
Fraker, W. A.
Freulich, Roman
Fryer, Elmer
Grimes, William H.
Hendrickson, Fred S.
Hommel, Geo. P.
Hopcraft, N. John
Johnson, Roy L.
Julian, Mac
Kahle, Alexander
Kling, Clifton
Kornman, Gene
Lippman, Irving
List, J. Z.
Lobben, C. Kenneth
Longet, Gaston
Longworth, Bert
Lynch, Bert
Manatt, S. C.
Marigold, Mickey
Martin, Shirley V.
Miehle, John J.
Osborn, Harry
Richardson, G. E.
Rowley, Les
Sibbald, Merritt J.
Six, Bert
Tanner, Frank
Van Pelt, Homer
Welbourne, Chas. Scott

### Associate Members

Mr. George Cave
Mr. Emery Huse
Dr. W. B. Rayton
Mr. Fred Gage
Dr. C. E. K. Mees
Dr. Herbert Meyer
Mr. Hollis Moyse
Dr. Lloyd A. Jones
Dr. V. B. Sease
Dr. L. M. Dieterich
Dr. J. S. Watson, Jr.

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*Membership by Invitation only.

# Members Turn to A. S. C. Agency for Representation

BECAUSE of the wide and comprehensive representation given the cameraman member of the American Society of Cinematographers by its Agency, a large majority of the cameramen are turning to this agency for representation not only in the studios but also in their other business matters.

Realizing that the professional man has not equipped himself in all instances for the conflict with the business world, the agency has set up as one of its operating forces a department which looks after the business affairs of the member, such as investments, insurance and other such things that become a part of the activity of a man with the earning power of the average cinematographer.

The agency taking over these duties leaves the individual with a freer mind. He is not only represented in business matters, but also his legal affairs are looked after by the legal department of this agency.

Through the history of the motion picture business, the cinematographer has been the most important human unit. Without him there would be no picture. While the actor and the director have assumed great importance and have demanded a monetary return that runs into stupendous figures, yet pictures could be made without them, but pictures could not be made without the cinematographer.

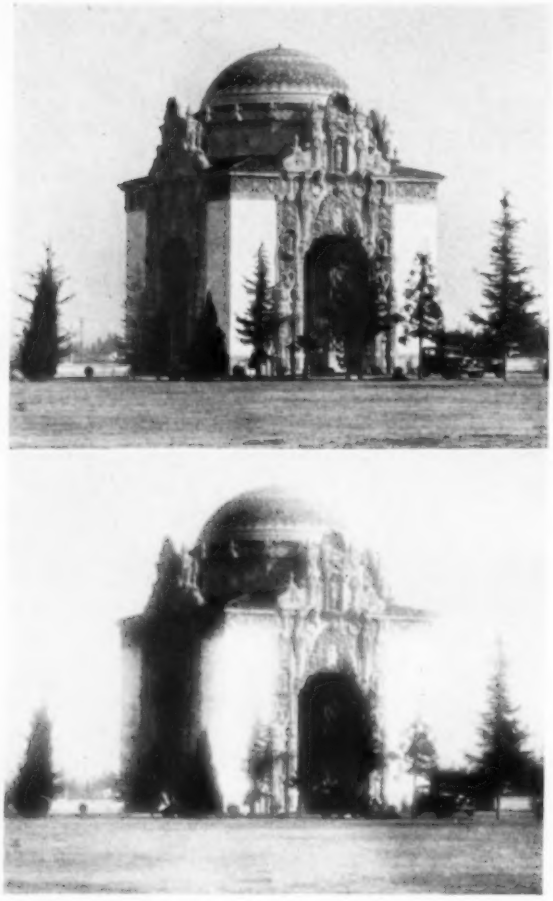
Recognizing this basic fact, the A.S.C. Agency is striving through its personnel and activities to bring the cinematographer to the recognition and position which his work deserves.

Also by reason of this agency a better deal can be worked out for the individual cameraman as the agency itself is in touch with, and familiar with all existing conditions. The motion picture executive is conceded to be one of the shrewdest business men extant; his method of handling business is marveled at by many outside of the industry. It is with this man that the professional cinematographer is asked to compete, and because he has not been equal to the task he has not reached the heights he deserved.

The actor and the director recognized this fact early and brought into being the personal representative and the agency. Through these forces the actor and the director have reached a position and been given a recognition in a few short years that they could not have attained by individual effort over a half hundred years.

It is a recognized fact in the history of the motion picture industry that individual representation has never brought the results for the artist that he could secure by entrusting his activities to those trained to cope with situations such as are brought up by the employment of talent in the motion picture business.

Recognizing these facts the cinematographer feels that the establishment of the A.S.C. agency establishes a new milestone in the better recognition of the cinematographer in the industry.



**Top, taken without a filter. Bottom, same scene taken with a No. 1 Diffusion Filter.**

# Filters For Special Effects

By

**George H. Scheibe**

Filter Specialist

THE term "Photographic Filter" all too frequently is used—even by technicians—to designate merely color filters. While this interpretation is correct as far as it goes, it is incomplete, for it ignores the ever-growing range of Effect Filters. And yet, oddly enough, this latter class of filters (and they are filters in every sense of the word) are now used far more frequently than even the most popular ray screens or color filters!

Under the general heading of "Effect Filters" we find the many types of screens for producing diffused or soft-focus effects; fog filters, for producing the effect of fog; Neutral Density filters; graduated color or Neutral Density filters for producing special filtered effects or transitions; special filters for controlling the projection "hot spot" in background-projection process cinematography; a variety of iris-vignetters; and even the familiar monotone viewing-glass, which is a true filter in spite of the fact that it is used only visually.

Without doubt the most universally used photographic filter today is the Diffusion Filter (or screen). Hardly a single scene is photographed today—either in the studio or on location—without the use of some type of diffusing screen. In fully half of these scenes, the diffusion is so delicate that it is noticeable only to the trained technician; yet it is the presence of this all-but-imperceptible diffusion which is responsible for the charm, naturalness, and "quality" of modern studio cinematography. To discover the reason for this, we must examine—if only briefly—the tremendous disparity between the human eye and the perfected lenses now used for photography and cinematography. According to the statements of many famous oculists, the human eye is at best a most imperfect instrument; it is doubtful if a single perfect pair of eyes has ever existed. Even those of us with theoretically normal vision do not perceive things with the microscopic sharpness of a modern anastigmat lens; there is always present a certain—and unusually subconscious—degree of natural diffusion. Our optical engineers, on the other hand, have so perfected their lenses that even the fastest objectives now in use render an object with a far greater degree of sharpness and detail than th human eye ever perceives in nature. Accordingly, the pictures made with these lenses are frequently jarring to our optic sensibilities; we see details—imperfections—the texture of skin and makeup, and so on—which detract from our enjoyment of the picture and its message. Accordingly, diffusion filters have been devised to delicately soften the image cast by the lens, obscuring these defects, and giving a satisfyingly natural picture without sacrifice of any of the essential characteristics of the lens—its speed, correction, and general quality. In studio practice, these filters smooth out facial wrinkles, banish the flaws in makeup, and make the picture generally more pleasing. Commercially, these diffusion screens are made in a number of grades, giving diffused effects ranging from the very slightest to the heaviest permissible softness. The basic number of the series—No. 1—gives a moderate degree of diffusion, as shown in the illustration. The No. 2 gives a heavier diffusion, and the No. 3 an extreme softness, suitable, as a rule, only for extreme close-ups. For many years, these three were ample for all needs; but of late, lighter and yet lighter screens have been demanded. Therefore the No. ½ appeared, giving a slight softening; then the No. ¼, for very delicate effects—and most recently the No. ⅛, No. 1/16, No. 1/32, and even No. 1/64. Many famous cinematographers use one of these lighter screens for all scenes, applying heavier ones only for close-ups—and never working without a diffuser.

16mm users will find the lighter gradations extremely beneficial to their camerawork, though the magnification in projection, together with other considerations of optics, film, etc., preclude the use of anything heavier than a No. 1 diffuser. Users of "Leica" and "Contax" miniature cameras will find these diffusers very useful, too, in making their enlargements. Several users have told me that the use of a No. 1/64 Diffuser on the lens of the enlarger when making big enlargements tends to minimize the grain-effect so injurious in this work.

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# Tricks by Optical Printing

By

**Lynn Dunn, A.S.C.**

Optical Printer Operator, RKO Camera Effects Dept., Vernon Walker, A.S.C., Chief.

IN LAST month's issue, I explained the subject of Optical Printing in general, and described the Optical Printing machine in use in the Camera Effects Department at the RKO Studio. This instrument, I believe, is the most efficient of its type in use today. It is required to do every type of normal and trick Optical Printing, including the making of "dupes," dissolves, fades, etc., and that most modern and varied of transitions, the "wipe-off." A "wipe-off" or "wipe-over" is a short transition from one time or place to another, used in lieu of the more conventional lap-dissolve. Wipes are best used when this type of transition is particularly suited to the action or tempo of the scenes involved.

Tricky wipe-overs seem to be growing more and more popular. We started something at RKO by appropriately scattering these effects in a short-subject called "So This Is Harris." These wipes met with such entire approval that they were called for in "Melody Cruise." "Flying Down to Rio" was the third RKO picture to require a large assortment of these effects. In all cases we were given a very free hand in the selection of the type of effect to be used. Every attempt was made by us to adapt the effect to the type of scenes involved. The full confidence of the Director, Editor and Producer, as shown by their giving us a free hand in the use and creation of these effects, was one of the biggest factors in the success achieved. In this connection, Messrs. Lou Brock and Mark Sandrich of RKO deserve special mention for their foresight and for their confidence in these effects and our ability to devise them.

The accompanying illustrations show a few of the trick wipe-overs used in recent RKO pictures. Fig. 5 is a 'push-off' effect, the new scene sliding in and shoving the first one off the screen. Fig. 6 is a 'curtain wipe,' the first scene sliding up and revealing the new one. Its adaptability is apparent, as the new scene is the stage of a theatre. Both effects are done by accurately moving the printer-head, Fig. 6, using a matte in addition. Fig. 7 shows both halves of the new scene sliding in together over the old one. Adaptability is apparent here also, and the Sound Department added a finishing touch by recording the click of the glasses. Fig. 8 is another form of this type of wipe: in this one the first scene was split in half, and twisted downward off the screen, revealing the new scene. Figs. 9, 10 and 11 illustrate the film-matte wipe-off. This type of effect is made by means of positive and negative film mattes, blocking out the first scene and revealing the new one, successively synchronized on the same section of film. One's imagination can run free with this type of wipe, and need only be limited by the means at hand for animating the mattes. Note the suitability of the dripping type of film-matte as illustrated in Fig. 11.

Fig. 12 shows a roll-down type of wipe, the new scene unrolling over the old one. Fig. 13 is a revolving wipe, used to more or less represent a propeller. Fig. 14 is a page-turning effect, quite fitting for a considerable lapse of time, or an important change of location. Fig. 15 is a rather new effect called a "sawing wipe." The teeth of the "saw" not only move across from right to left, but travel downward across the screen, practically sawing the old scene away. This required a specially-made matte and mechanical travel for the matte-holder. Figs. 16 and 17 are quite mechanical appearing, but are effective when used in the proper place. They can be made with or without the black separation. We have special mattes made up for a dozen or more of this type of wipes. The turn-over effect, Fig. 18, is very novel, and has become quite popular. It

(Continued on Page 496)

Fig. 5

Fig. 6

Fig. 7

Fig. 8

Fig. 9

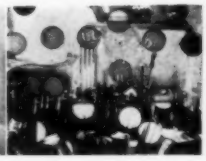


Fig. 10

Fig. 11

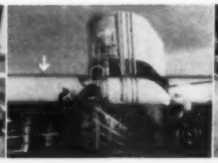


Fig. 12

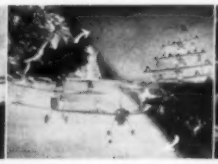


Fig. 13

Fig. 14

Fig. 15

Fig. 16

Fig. 17

Fig. 18

Fig. 19

Fig. 20

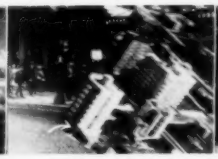


Fig. 21

Fig. 22

# Charles Lang Wins Academy and "Reporter" Awards

CHARLES BRYANT LANG, Jr., A.S.C., has been twice acclaimed by the Motion Picture Industry as the most outstanding Director of Photography of 1933, winning the Awards given by the Academy of Motion Picture Arts and Sciences and by the "Hollywood Reporter" for his artistry in photographing "A Farewell to Arms."

For almost the first time in the six-year history of the Academy Awards, the Award for Cinematography, in both the nomiation of the finalists and the selection of the ultimate winner, fully coincides with the experienced opinion of the camera profession. Seldom has the approval of the cinematographic community pointed so unwaveringly at a single achievement. Without detracting an iota from the unquestioned excellence of the other nominees in this class —or from the many outstandingly photographed productions not so honored—Cinematographer Lang's achievement is without doubt the supreme photographic achievement of the year. That he should be the recipient of these high tributes, and in a year in which Cinematographic Art soared to new peaks, is a signal honor, deservedly bestowed upon a great artist. That the bestowal of the Awards should meet with such unquestioned approval among Mr. Lang's fellow-artists is an even greater tribute to his artistry and to the man himself.

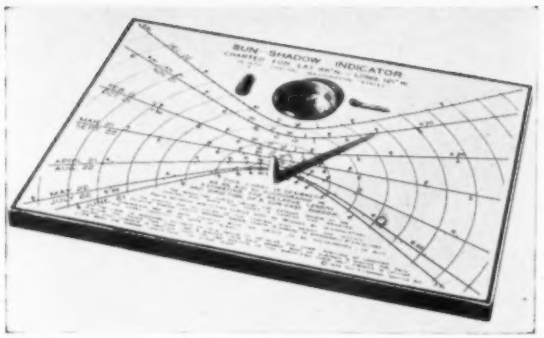
When "A Farewell to Arms" was first reviewed in these pages, immediately before its release, the following comments foreshadowed the approval which attended Cinematographer Lang's achievement, and which culminated in the signal tributes so appropriately awarded this month: "Once in a long while comes a picture so perfectly photographed that it can stand as a milepost in the progress of the Art of Cinematography. 'A Farewell to Arms' is such a picture. It is superbly, inspiredly photographed by Charles Lang, A.S.C., who, by this achievement, should gain universal recognition as one of the few really great masters of the camera. . . . Primarily, 'A Farewell to Arms' is a study in the Art of lighting. Lang has reached amazing heights of artistry in this, nor has he descended to the obvious in any scene. His lighting of the players is perfect in its absolute naturalness; it shows them off to the best advantage, yet conceals every trace of artifice. His lighting of the sets is superb. Every shot is a masterpiece of intelligent pictorialism. The lightings enhance the richly atmospheric sets, and are moreover supremely intriguing in themselves. They merit the careful study of every student of this subtle art. . . . Many of the outstanding sequences of the film are dialogueless, relying entirely upon photography and pictorial action for their expression: they are flawless passages in the poetry of the cinema. Farciot Edouart's contribution in process photography is also more than ordinarily notable."

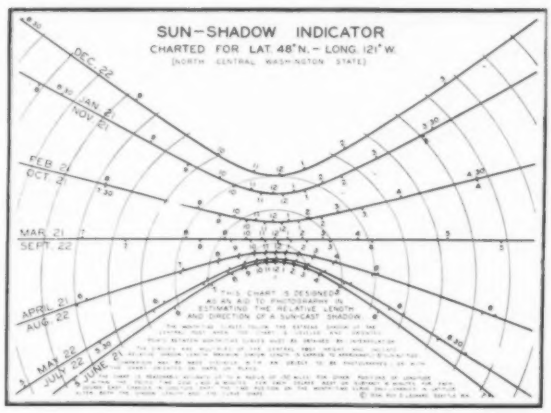
Cinematographer Lang's rise to prominence has been almost meteoric in its rapidity, yet withal marked by unusual stability. Less than seven years ago, when he first became a member of the American Society of Cinematographers, Charles Lang was an obscure Second Cinematographer. When, not long afterwards, he received his promotion to the rank of a full-fledged Director of Photography, he was assigned to the photography of obscure Westerns and programme-films, though for a major studio. But his rise continued; soon he was assigned to photograph the productions of Ruth Chatterton, at that time one of the studio's brightest luminaries. He photographed all of Miss Chatterton's Paramount releases, and thereafter, those of Tallulah Bankhead and Maurice Chevalier. Among his fellow cinematographers, Lang soon gained an enviable reputation, not only as an artist of the first rank, but as one of the most consistently artistic workers in the field. For several years a member of the Board of Governors of the A.S.C., Charles Lang's ability, sincerity and modesty have won him high personal recognition among his fellows. His character is, perhaps, best indicated by his response to Toastmaster Will Rogers in acknowledging the Academy's Award: "Thank you. I greatly appreciate this honor, but I feel that it is not mine alone, but that of my crew—Operative Cinematographer Robert Pittack, A.S.C., and Assistant Cinematographer Clifford Shirpser, A.S.C.—and of the Paramount Laboratory who processed the film so well."

In the Academy's balloting, the runners-up for Cinematographic Award were George Folsey, Jr., A.S.C., for "Reunion in Vienna"; and Karl Struss, A.S.C., for "The Sign of the Cross." In the selection of the "Hollywood Reporter's" Award, second place went to Lee Garmes, A.S.C., for "Zoo in Budapest," with Victor Milner, A.S.C., a very close third with "Song of Songs." Any of these productions would, in any other year, unquestionably have merited first honors. Indeed, 1933 was an extraordinary year in cinematography, for seldom if ever in the history of the Cinema have there been so many superbly-photographed productions released in so short a period.

Special Honorable Mention among the Technical Advances of the year was awarded by the Academy Technicians' Committee to Fred W. Jackman, A.S.C., for his part in perfecting the cellulose process-screen.

Other Awards announced by the Academy include: Best Production, "Cavalcade"; Best Performance by an Actor, Charles Laughton, in "Henry VIII"; Best Performance by an Actress, Katharine Hepburn, in "Morning Glory"; Direction, Frank Lloyd, for "Cavalcade"; Best Original Story, Robert Lord, for "One-Way Passage"; Best Adaptation, Sarah Y. Mason and Victor Heerman, for "Little Women"; Art-Direction, William Darling, for "Cavalcade"; Best Recording, Franklin H. Hansen, head of Paramount Sound Dept., for "A Farewell to Arms." The short-subject Awards went to Walt Disney, for "Three Little Pigs"; Lou Brock, of RKO, for "So This Is Harris"; and Educational Pictures, for "Krakatoa." Special Certificates for Technical Merit were Awarded Electrical Research Products, Inc., for their "Wide-range" recording and reproducing system, and to RCA-Victor for the Photophone "High Fidelity" sound system. The Technical Honorable Mention, for the development and use of the Cellulose Process-screen, was given Fred W. Jackman, A.S.C., Sidney Saunders, and the Fox and Warner studios.






# Sun Shadow Indicator

By

**R. S. Leonard**

WHAT path does the sun travel daily on its annual voyage from north to south and back again? Where will it be at some particular time of day —at some particular time of year? Such questions could probably be answered definitely by only a few, certainly not without access to astronomical data, and not without a great deal of time-consuming calculation. Yet definite knowledge of the sun's altitude and direction at any given time is most intimately concerned with all outdoor photography. Not only to permit adequate exposure, but to insure light of the direction and intensity necessary for proper rendering of the subject to be photographed.

Taking pictures of a great public power development at all times of the year made the need of such knowledge increasingly apparent. Still and motion pictures were taken of all construction phases, of railroad and transmission lines, of dams and lakes, of the scenic magnificence so intimately a part and background of the development; pictures of the tremendous 1200 square mile power reservoir that makes the project possible, an area of granite gorges and glacier capped peaks. The project lies in a country so rugged that many of the most spectacular locations are in sunlight only a part of the year, at times in places so difficult of access that a second attempt was seldom possible—all this in a country of heavy rainfall and great cloud masses, of sudden weather changes and uncertain sunlight. Such difficulties prompted a search for some sort of a device for quickly forecasting the sun's position at a given time and place. Nothing seemed to be available, however, and after a certain amount of effort, the device in the illustration was produced. It has proved practicable in use and apparently quite accurate enough for its purpose.

The Sun Shadow Indicator is simple enough. Basically, it is merely a monthly charting of the path followed by the extreme shadow of a vertical post as the sun passes from east to west. The seven curves on the chart follow the shadow path of the day and month indicated on the respective curve. Intermediate days between these monthly curves are obtained with sufficient accuracy by interpolation. It would be more confusing than helpful to show very many of these curves, so only seven have been charted. The extreme curves of December and June mark the limit of sun travel north and south. Each of the other curves serves for either of two months because the sun naturally follows the same daily path at a given altitude, whether moving north or going south with the seasons. Because of the elliptical path traveled by the earth, however, the hourly time divisions for each month will not coincide. The curve of March 21st and September 22nd is a straight line because at that time the sun is over the equator.

The concentric circles are multiples of the post height and provide a ready means of estimating the length of the shadow in terms of the post height. For instance, in the illustration the shadow is in a direction that indicates three o'clock on or about June 21st, and the length of a sun cast shadow at that time is 4½ times the height of the object causing the shadow.

A magnetic compass is inset in the chart so that it may be properly oriented with the sun. Spirit levels are also included so that the chart may be held level and the correct length of the shadow indicated.

In use, the shadow indicator is leveled and turned until the compass needle is over the north point. It may be held in the hands, or placed on a tripod head or similar support. The sun need not be shining to obtain the shadow direction, but the presence of a magnetic deflection can be determined by a comparison of actual time with time indicated by shadow.

With the indicator properly leveled and oriented, a visual comparison is made between the post with its cast shadow and the object to be photographed. This visual comparison is the basis on which the practicability of the whole idea rests. In practice, the comparison method seems satisfactory, and it has been found that good results can be obtained with distant as well as close-up subjects.

The most desirable direction of light is then decided upon and the shadow length and the time of day at which it will occur is found on the chart. If proper shadow length and direction would not occur on that day, it is quite easy to determine if some other time of day would be more suitable. It has been found in practice that the indicator may be used in a ravine or in the shadow of obstructing objects such as mountains or buildings, and the time and duration of possible sunlight determined. Used in building interiors where photography may be involved with sunlighting through windows, it will indicate the time, direction, and extent of sunlight penetration. Laid on building or construction plans, it is possible to determine with reasonable accuracy the proper time to photograph a subject without need of preliminary inspection by the photographer.

(Continued on Page 494)

# Cinematic

SEVERAL basic improvements are to be noted for the year 1933, but their general adoption has been in almost every case deferred until more propitious economic conditions return. The majority of advances have been in details of equipment and practice—improvement of that already at hand, rather than the acquisition of anything radically new. None the less, much progress can be chronicled for the year 1933.

**Cinematographic Methods**

In virtually all of the studios, one camera per set has become standardized, with added cameras being used only rarely. At the same time, production schedules have been, in several instances, materially reduced. A feature-length, programme picture which but a few years ago would be allowed a shooting schedule of thirty days or more is now generally scheduled for eighteen days or less (12-15 days in one major studio)—and not infrequently completed considerably under the schedule. This has naturally brought about a somewhat greater efficiency in operation, though at the excessive price of absurdly long working hours, unduly great physical and nervous strain on the personnel, and the slighting of many important elements of really fine cinematography. It is noteworthy that the films held to be the most successful have generally been those allowed longer, more reasonable schedules, avoiding excessive overwork.

Relatively few changes in actual photographic methods have been observed, the bulk of advancement being detail improvements in equipment, etc.

**Influence of Foreign Elements**

Technically, the influence of foreign elements during 1933 proved negligible, although two releases ("Be Mine Tonight" and "The Private Life of Henry VIII") have influenced the trend of production to some extent.

The Dunning Process Co., of Hollywood, introduced a European method of "Matte-ing" films, to remove scratches on valuable negatives.

**Raw Materials**

Virtually unchanged. The standard negative material is the SuperSensitive Panchromatic type, non-halation backed, and largely of Eastman and DuPont manufacture. Similar emulsions, slightly slower, but of unusual fine-grain characteristics, have been introduced by both firms for the making of transparency background-plates. Infra-red-sensitive film has also been made available; this was used by Elmer G. Dyer, A.S.C., in making what have been held to be the finest aerial night-effect scenes made commercially, in M-G-M's "Night Flight."

The use of tinted-base positive stock has made some gains in the past year, especially in "Zoo in Budapest" and "I Am Suzanne,' photographed by Lee Garmes, A.S.C., and in some of the films photographed by Victor Milner, A.S.C., and Hal Rosson, A.S.C.

Sound-track or "recording" positive emulsions, coated on 16mm stock, have been made available to the amateur trade, giving a moderately fast, semi-chromatic film at a greatly reduced price. This is largely of DuPont manufacture, but marketed by several laboratories, who handle the reversal processing of their film, under the trade-names "Pellex," "Sun-Ray," "Rod-Al," etc.

**Cameras**

Both Mitchell and Bell & Howell have introduced silent cameras, which have been tested, and used to some extent on productions. Though quite successful, economic factors have retarded their general acceptance. The French-made Debrie "SuperParvo" silent camera has been shown in America, while both the Debrie and Eclair silent designs have been used quite extensively in Europe.

Several improvements in blimping have been introduced; notably the Fried design, which consists of a standard Bell & Howell or Mitchell camera, suitably silenced, and rebuilt as an integral part of a small, lightweight blimp; and the RKO type, described elsewhere in this issue. The Educational-Fearless blimp has been made commercially available.

In the amateur field, Eric M. Berndt, of New York City, has designed and marketed a custom-built, professional-type 16mm camera, embodying virtually all the features of a studio camera, and adapted for sound-recording, by either single or double system.

The Eastman Kodak Co. brought out the Cine-Kodak Special, a virtually professional camera for advanced 16mm workers. It is capable of hand or motor drive, at any speed from single-frame to 64 frames per second, forward or reverse; and fitted with direct focusing, a two-lens turret, matting facilities, dissolving shutter, and an interesting magazine arrangement, somewhat reminiscent of the Akeley principle, for 50, 100 or 200-ft. lengths of film.

Bell & Howell introduced a semi-professional Eyemo and Filmo, featuring a range-finder, optional hand or electric motor drive, and detachable, external 200-ft. magazines.

Victor has added a (hand) reverse-crank to their DeLuxe "Model 5" 16mm camera, and, with the continuance of the "Model 3" type, made notable advances in the low-price class.

The magazine (or "charger") type of amateur cine camera has gained in popularity with the success of the "Simplex" and the introduction of the new "121" magazine-type Filmo. The magazine plan has incidentally minimized one of the commercial evils of the 16mm film trade—the wastage of "short ends"—lengths of 40-50 ft., which can now be used as loads for the magazines.

The 8mm standard has made great progress during the year, two types of equipment being available in this standard (Eastman and Stewart-Warner), with a considerable variety of equipment and accessories.

**Camera Accessories**

An outstanding development in the line of professional accessories is the introduction, by Harrison and Harrison, of a positive-type view-finder matched to 24mm lenses. The same firm has also introduced a professional type, positive-lens view-finder for amateur use.

There has been a notable increase in the use, by professionals and amateurs alike, of photoelectric exposure-meters. Several new instruments of this type, including the Weston, have been marketed.

Several studios—notably MGM, RKO and others—have developed finders which are mechanically connected with the focusing adjustment of the camera lens, automatically correcting for parallax. Some designs focus the finder-lens synchronously with the camera-lens; often this adjustment is provided with compensating elements which keep the finder accurate regardless of the focal-length of the camera-lens used.

The Bell & Howell "Rotambulator," adapted from a design by John Arnold, President A.S.C., has come into general use in several studios in place of tripods, dollies or light cranes.

The Fox Studio introduced the "Velocilator," a very fine small crane for general use. It is being manufactured under license by the Fearless Camera Co.

General Service Studios have developed a fine large crane, one of the two largest in the industry, and interestingly designed. One man can operate it, as the counter-

# Progress During 1933

## A Technical Review

weights are sliding rather than fixed, and assure very accurate balance. It is designed to be transported as a trailer.

**Lenses**

Professional lens-speeds have remained fairly constant, varying between f:2.7 and f:2.3. The Astro "Tachon" lens, f:0.95, has been shown within the year, and tested by members of the A.S.C. Research Committee, in both the professional and amateur mountings. The visual and chemical foci are rather divergent, so it has not been possible, as yet, to calibrate these lenses with sufficient accuracy to take advantage of their undeniable speed and good optical quality.

The German camera firm, Askania, G.m.b.H., has introduced a mirror-lens, a telephoto on the principle of the reflecting telescope.

The Bell & Howell "Varo" variable-focus or "Zoom" lens has been used considerably on production.

**Lighting**

Incandescent lighting has remained in the ascendant, although the carbon-arc remains supreme for certain light-effects, and for natural-color cinematography.

The General Electric Co. has developed large bulbs of the Photoflood, high-intensity type, for studio use. These are known as the "Movieflood," and are similar to the usual 1,000 Watt, PS-52 bulbs, but deliver approximately 100 per cent more light, though with a rather shorter life, averaging 15-18 hours. The chromatic composition of the light from these bulbs is considerably improved, with an increase of 140 per cent in the actinic (blue-violet) region, and an almost corresponding reduction in the infra-red or heat emanation, which is of no photographic value. These units are excellent for monochrome cinematography, having notably improved "carrying power." They were, however, designed primarily for natural-color cinematography.

The National Carbon Co., in conjunction with Mole-Richardson, Inc., of Hollywood, have developed new Super-Panchromatic carbons for arc-lighting both natural-color and monochrome cinematography, and new lighting-units of greatly improved efficiency for their use.

Kliegl Bros., of New York, have also introduced several improved incandescent lighting units, now undergoing tests.

In the amateur realm, the regular Photoflood bulb, together with new, extremely low-priced lighting units for use therewith, have greatly increased the interest in indoor movies and stills.

A new professional diffusing screen, for studio lights, has been introduced by B. M. Bodde, of Hollywood, who claims for his device the softness of a "silk" with the translucency of an oiled gelatine diffuser. In addition the new diffuser is said to be heat-proof and waterproof.

**Trick or Process Cinematography**

The transparency, or projected-background process has virtually eliminated the color-separation transparency methods of producing composite shots. Several interesting developments in this connection have occurred, including the introduction of several types of cellulose-acetate screens. Earlier in the year the Sidney Saunders cellulose screen was announced, and most recently the Bodde type, which is fireproof, and partially polarizes the projection beam. It is said to correct the projection "hot-spot" markedly, and to minimize grain.

These screens, together with improved design of the optical units of background-projectors, have permitted the use of vastly larger screens. There have been some experiments with filters, fitted to the projector, for controlling the hot-spot. Several portable background-projectors, including that of George Teague, of Hollywood, have been placed in operation, greatly increasing the flexibility of the process.

Dr. L. M. Dieterich, A.S.C., invented a new color-separation composite process, embodying different principles than those heretofore used.

Several films released by RKO have had unusual displays of trick transitions, made on the Optical Printer by Vernon Walker, A.S.C., and Lynn Dunn, A.S.C. Among these films are "So This Is Harris," "Melody Cruise" and "Flying Down to Rio."

**Natural-Color Cinematography**

Technicolor's three-color process has been used for over a year in making Walt Disney's "Silly Symphony" cartoons, and has caused a marked trend to color in animated cartoons. The three-color Technicolor has also been used on feature productions, for sequences from "The Cat and the Fiddle" (MGM) and "Rothschild" (20th Century) with good effect. The process, while still in the development stage, shows considerable promise, especially as the lighting technique is mastered.

Cinecolor has announced several improvements in processing methods for two-color, bipack processes.

The Dunning Process Co., of Hollywood, has successfully reduced a number of 35mm two-color subjects to 16mm, using duplitized 16mm positive stock. Negatives of all types—Technicolor, Multicolor, Magnacolor, Cinecolor, and even Prizma and Kinemacolor—have been utilized.

**Stereoscopic Cinematography**

A good deal of experimentation has been quietly carried on in this direction, both independently and under the wing of various studios. Little, however, has been announced regarding these experiments, though it has been rumored that at least one of these systems is shortly to be tried out on a feature production.

**Television**

As outlined elsewhere in this issue, a good deal of experimentation in Television has taken place, with results that are technically gratifying, but which indicate that commercial television is as yet rather far in the future.

**Film Standards**

Wide film, a subject of much consideration a few years ago, has apparently vanished from view. Were economic conditions more favorable, it might well commend itself for process-background use, however, since the equipment for it still exists.

At present, there are in America three recognized film standards: the professional standard, 35mm; and two amateur standards, 16mm, also used in industrial and educational use, and 8mm, a purely amateur standard, created by slitting specially perforated 16mm film lengthwise (after development), and projecting as a narrow strip with but a single set of perforations. Great economy is possible by this method: judged on a basis of equivalent screen time, a saving of 66 2/3 per cent over 16mm is noted, and approximately 91 2/3 per cent over 35mm.

In Europe, in addition to the familiar 35mm and 16mm standards (8mm is only now being introduced in such regions as Great Britain) there are two other standards. The Pathe-Rural, of France, intended primarily for village cinemas and industrial work, though lately made available to some amateurs, uses a film essentially similar to 16mm,

(Continued on Page 494)

# Featherweight Blimp Has Many Innovations

By

**Henry William Gerrard, A.S.C.**

**New RKO Featherweight Blimp, opened. The finder-tube is folded down to allow opening of door; directly above note focusing control and dial.**

FOR the past month, I have been privileged to use a new and really modern camera-equipment in the photographing of my latest RKO production, "Of Human Bondage."

Essentially, the new device consists of a standard Mitchell camera, rebuilt as an integral part of an unusually light soundproof housing, and designed in such a way that the case need be opened only for loading. All normal operational procedure—focusing, adjustment of lens and shutter, etc.—may be carried on entirely from the outside. The finder system, while in many ways similar to accepted current practice, in which the finder is automatically corrected for parallax, has been developed to a high degree of perfection. The new outfit weighs but 116 lbs. loaded and ready for use. It may be used, if necessary, on an ordinary silent-picture tripod, and carried about the studio as easily as a silent-picture camera.

The camera used is a standard Mitchell, equipped with a silenced speed movement. The forepart of the camera, including the turret, lens-mounts, etc., is eliminated, and only the actual camera-box and the base upon which it slides are used. This is fitted into the Blimp in a semi-permanent mounting, with an accurately made front plate —an integral part of the blimp—replacing the portions of the original camera which have been removed. The rest of the blimp consists of a hardwood frame, built up from an insulated metal base-plate, lined with the usual sound-absorbent materials, and covered with leather. This casing is shaped to conform to the contours of the camera; the upper quarter opens for insertion of the film-magazines, and the panel opposite the camera-door, on the left-hand side, opens for threading. A door, fitted with an inspection-window, is provided beside the takeup pulley, and another at the rear of the motor.

At the rear, windows are provided through which the footage-meter and the shutter-aperture indicator may be observed. The regular Mitchell focusing-tube connects with an eyepiece extended through the back of the blimp case, as is the throw-over lever. Two buttons beneath the eyepiece control the blue and "pan" viewing filters in this focusing system, while to the right of the ocular are similar buttons which control the shutter setting, etc., and permit making fades in the camera. A spirit-level is built into the housing, and all dials, etc., are illuminated.

In front of the case is mounted a rebuilt standard matte-box. The bellows has been eliminated in favor of a short tube, which fits directly into the lens-mount. The matte-box supporting arms are mounted upon a bracket which is in turn hinged to the camera-housing, so that by the operation of a simple release, the entire assembly may be swung to one side, out of the way.

Undoubtedly the greatest advances in the design are found in the lens-mounting and the finder system, which are interlocked. The turret, as has been mentioned, is eliminated in favor of a single lens mount. The lenses are mounted in special barrels, which fit interchangeably into this mount. They are so designed that they cannot possibly be inserted incorrectly. A system of cams is provided so that a single set of focus-calibrations is accurate with all lenses, and the automatic adjustments of the finder, which correct for focus and parallax, are also accurate for any lens.

The finder, which is mounted, as usual, beside the camera, on the left-hand side of the case, comprises two units: the finder proper, and a dial engraved with the focusing calibrations. This dial is placed directly above the finder, and is equipped with a light, enabling the calibrations to be read more easily, and an adjustable mirror, so that the indicator may be read from behind the camera.

By means of a large knob, located directly below the indicating dial, the finder is automatically focused and corrected for parallax in one operation; the same operation automatically focusing the camera-lens. By means of a specially designed system of cams, this operation is accurate regardless of the focal length of the lens being used. The finder tube is hinged midway of its length, and folds downward, giving ample room for the opening of the camera and blimp doors for threading.

In actual operation, this new-day optical system works as follows: By means of the single knob controlling the camera-lens and finder, the picture may be focused in the usual manner, on the regular ground glass focusing screen of the Mitchell focusing system; or, alternatively (and often with far greater accuracy and satisfaction) the camera may simply be centered on any desired object in the picture, by observation through the focusing-tube. Then attention is transferred to the finder: by means of the focusing knob, the finder is simultaneously swung and focused so that the desired object is centered in the finder; when this is done,

(Continued on Page 496)

*For Three Years*

# THE LEADER

EASTMAN Super-sensitive "Pan" led the way into the amazing field of ultra-speed motion picture photography. That was three years ago. At no time since then has this Eastman film faltered in its leadership. Producers and cameramen today find that it is as closely linked as ever with the outstanding box-office triumphs...with the finest and foremost in cinematography. Eastman Kodak Co., Rochester, N. Y. (J. E. Brulatour, Inc., Distributors, New York, Chicago, Hollywood.)

EASTMAN *Super-sensitive Panchromatic Negative*

## Sun Shadow Indicator

(Continued from Page 489)

The indicator may also be used on geographic maps to compare sunlight direction with geographic features.

The effectiveness of exterior architectural detail and design is usually dependent upon its relation to predominant sunlight direction. Residence design is very much concerned with sun exposure and sunlighting of interiors. Factory and office buildings must be based on the maximum utilization of sunlight. The Shadow Indicator should prove a time-saver in determining the sun's position at definite or at average times throughout the year, and in work of this nature could be used as a simple chart, without compass or levels.

The device has one very decided disadvantage, however: it must be used within a reasoable distance of the position for which it was charted, although with care and the proper allowance for time and distance, the chart in the illustration could be used for the entire state of Washington. Areas where a considerable amount of outdoor photography is carried out should justify the production of a chart for that district.

The device has been invaluable in the particular use for which it was designed. Here are a few recent instances. The camera position for one picture was several hundred feet above a lake, facing south, and with a background of snow-covered mountains. The sun was moving across the sky, almost into the lens, and the snow-covered mountain side facing the camera was in shadow. The immediate problem was to determine if the sun would rise high enough to illuminate the snow fields and keep out of the lens. A quick reference to the Shadow Indicator gave the sunset position and showed that the time of year was too early to expect sunlight on the snowfields, and so the picture was taken without loss of time. A suitable time for a picture to be taken later was also determined. At another time, the camera position was on a hillside facing north and looking directly into a canyon, which at that time was in shadow. Reference to the Indicator showed that the canyon would be cleared of shadow in an hour, so the set-up was made. In still another case, a dam was to be photographed from a point below, and maximum brilliance of the water tumbling over the spillways demanded as nearly a horizontal sunlight as possible. It was doubtful if late sunlight would illuminate both spillway water and gorge, but the Indivator gave the time of day and year when both conditions would exist.

The following is an instance of almost invaluable aid; a position was to be determined for a permanent motion picture camera mounting for progress records of the construction of a great dam. These shots were later to be assembled to show the complete construction in a short space of time—a very difficult task at best. Average sunlight direction, penetration of sunlight to the gorge and dam foundations, and desirable light direction for photography were allobtained by reference to the Indicator.

Undoubtedly these cases are common problems and it is hoped that the Sun Shadow Indicator may help others in their solution. In outdoor motion picture photography, where sets must be constructed some time in advance of actual picture taking, where camera and equipment set-ups must be planned or made in advance, or where the choice of outdoor locations is definitely related to sunlight, the device may be of assistance.

## A.S.C. To Hold Golf Tournament

**The First Annual A.S.C. Cameramen's Golf Tournament will be held at the Hollywood Country Club on Sunday, April 8. All cameramen are eligible to enter the tourney, which consists of 18 holes of Medal Play. A large number of prizes and trophies are promised, including a perpetual trophy emblematic of the Cinematographers Golfing Championship.**

**The Tournament Committee includes Elmer G. Dyer, Chairman; Karl Struss, Allen Seigler, Ernest Haller, George Folsey, Richard DaVol, Norbert Brodine, Bernard McGill, Joseph Valentine and Fred Gage.**

**The Trophy Committee consists of President Arnold, of the A.S.C., Edward O. Blackburn, Wesley Smith, George Schneiderman, Gaetano Gaudio, Virgil Miller, Edward Cronjager, Charles Stumar and J. G. Van Trees, Sr.**

**Entry blanks will be available at the Society's offices, 1220 Guaranty Building and in all studio camera departments. They should be filled out and filed as early as possible, either with the studio's Camera Executive or at the offices of the Society. The Tournament Committee urge that all entrants state their average score, with whom they prefer to play, and the preferred starting-time. In so far as is possible, the foursomes and starting times will be arranged in accordance with these expressed preferences.**

**Play will start at 8:00 A.M., with the foursomes starting at ten-minute intervals thereafter. The Green Fee is $1.75, which includes lunch and shower and locker privileges. Entrants may practice on the course at any time previous to the tournament; the fee for this is one dollar.**

## Cinematic Progress in 1933

(Continued from Page 491)

but of a width of 17.5mm. Another French system, also introduced by Messrs. Pathe, and for exclusively amateur use, is the "Pathex" 9.5mm standard, distinguished by a most economical utilization of the film-area; the perforations are single, and in the centre of the film, between the frames. This standard is said to be even more popular than 16mm throughout Europe. It partakes of the economies of the 8mm system.

### Sound

During the past year the Western Electric "Wide Range" and the RCA-Victor "Highest Fidelity" systems of recording and reproduction have come into general use. They give a considerably wider response range in both recording and reproduction, with better quality and more natural sound.

Western Electric has developed a new light-valve, with one ribbon more highly damped than the other, giving a more uniform response, and a clearer record.

In the independent sound-equipment field, hitherto dominated entirely by glow-lamp equipment, several light-valve recorders (including the Fearless) have appeared.

### Sound-Films, Standard and Substandard

The split-film method of sound recording is being widely used. It is essentially similar to the amateur 8mm principle, involving the use of normal 35mm sound-track positive film for the record, with tracks made first along one edge, then the other. After development, this is slit longitudinally, and the accepted takes are segregated for printing

In other studios (notably RKO) a system of preselection is employed. Only the accepted takes are developed. The rest of the film is either reversed, and used anew for recording, or reclaimed, if this is impractical.

Dr. J. G. Capstaff, of the Eastman Kodak Co., recently patented a method of producing tinted-base positive stock in which the sound-track area remains clear. This is done by removing from this area the material of the film-base to the depth of the dye-effect, subsequently filling the groove with a protective, insoluble varnish. So far as is known, this method has not been introduced commercially.

16mm sound-on-film has become rather definitely standardized in America to the RCA-Victor dimensions; standard 16mm film, perforated on one side only, with the opposite area used to carry the sound-track.

In Europe, on the other hand, several substandard sound-on-film dimensions are used. The Pathe-Rural (17.5mm) system is, except for film-width, identical with the RCA-Victor 16mm standard. The British Thompson-Huston Co. (B.T.H.) and Tobis, of Germany, both

employ a standard which is virtually a complete overall reduction of existing 35mm sound-on-film: standard 16mm film, perforated on both sides, with the sound-track between the left-hand row of perforations and the narrowed picture-area. Will Day, in England, has suggested the possibility of putting a sound-track on 9.5mm film, using a narrowed picture, and a track whose striations are at an angle of 60 degrees to the longitudinal axis of film and track.

No great degree of outward progress has been made in direct recording of 16mm sound-films. One equipment—the custom-made Berndt outfit already mentioned—is available, and uses either glow-lamp, light-valve, or oscillograph recording, on the RCA-Victor standard track. The bulk of substandard sound-on-film, both here and abroad, is recorded on 35mm film, and reduced by re-recording.

### Re-Recording or Dubbing

The most interesting developments in this line, aside from the methods and equipment used here and abroad for re-recording from 35mm to 16mm or 17.5mm, is the Reagan-Day method of re-recording or synchronizing foreign-language dialog. As recently described in the AMERICAN CINEMATOGRAPHER, this process involves the use of special close-ups, in which the actors speak coded lines, using English words, but giving lip-movements synchronizing with the required foreign-language dialog. Thereafter, properly synchronizing foreign-language sound-tracks are made, and synchronized with the picture by means of an ingenious synchronizing machine developed for the process.

### Sound on Disc

This, the form of the original Vitaphone, to say nothing of the earlier, unsuccessful experiments such as the Powers Cameraphone of 1912 and the original Edison Talking Kinetoscope of 1895, has lapsed into desuetude. It is virtually unused in professional practice, despite the introduction, by Western Electric, of an improved recording system using Vertical Cut records. It is little used, even, in substandard practice. A good deal of equipment for amateur disc recording is available in England, however, where many amateurs seem yet to be experimenting with the method.

### Projection

No outstanding improvements in professional equipment or methods have been noted; in fact, quite the reverse, as the depression has impelled many exhibitors to economize excessively in their projection-booths, reducing the amount of light used, the crews, etc., and overlooking many needed repairs. It has been stated that this condition is costing distributors in the Los Angeles territory alone over $1,000 per week in replacements of damaged prints, and that a print which should normally have a life of 15 to 20 consecutive engagements now have a live of less than five such runs.

In the amateur realm, there has of late been a very considerable increase in the power of the projection lamps used in 16mm projectors. At the introduction of 16mm, eleven years ago, the average lamp was but 150-200 Watts, with the largest only 250 Watt. A year ago, roughly, 350 and 400 Watt units were introduced. Within the past year, 500 and even 750 Watt lamps, with forced ventilation, etc., to protect the film, have come into use, an increase of over 300 per cent. This power permits projection upon even theatre-size screens (15-18 feet wide) with truly professional results.

Several manufacturers—notably Bell & Howell and Victor—have introduced excellent 16mm sound-on-film projectors, using the RCA-Victor standard film, and easily adapted to projecting silent film, as well.

At least two European firms (Bolex-Paillard and Siemens) have introduced projectors using 16mm, 9.5mm, and 8mm interchangeably.

### Laboratories

There has been noted a considerable improvement in the quality of the out-


# *The new 48-speed Eyemo*

## gives the highest speed available in a portable 35 mm. camera

The new 8- to 48-speed Eyemo 35 mm. hand camera, developed to permit taking pictures at twice sound speed, is now available on order.

This convenient, versatile camera has already proved its value to Martin Johnson, who is using it for filming big game from the air. It will be a boon to any cinematographer who has to produce semi-slow motion scenes under circumstances which make the use of a studio camera difficult or impossible. Its speed range, 8 to 48 frames per second, gives it general utility.

Known as Eyemo 71-CD, the new model has a three-lens turret head mounting the Cooke 47 mm. F 2.5 lens, standard equipment, and any two extra lenses selected from the Cooke line, ranging in focal length from 24 mm. to 20″, and in speeds as fast as F 2. There is a hand crank for optional use, and a 12- or 110-volt electric motor may be employed. The governor gives accurate control of any desired speed, whether spring motor, hand crank, or electric motor supplies the power. Model 71-CD, like 71-C, may be adapted to use external 200- or 400-foot magazines.

Your present Eyemo 71-C can be converted to operate at 48-speed.

**BELL & HOWELL**

Bell & Howell Company, 1848 Larchmont Ave., Chicago; 11 West 42nd St., New York; 716 North La Brea Ave., Hollywood; 320 Regent St., London (B & H Co., Ltd.) Established 1907.

put of several important studio and commercial laboratories in Hollywood.

The Dunning Process Co. and the laboratory of the DuPont Film Mfg. Co.'s factory have both standardized on a modified paraphenylene-diamine developer for fine-grade development of 16mm negative, with excellent results.

**Art Direction**

The year has been marked by an influx of art-directors from the stage, including Willy Pogany, the late Joseph Urban, Robert Edmond Jones, etc., and by the invention, by Henri Coulon, of an interesting machine for scientifically matching the colors for costumes, settings, etc.

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# Trick Optical Printing

(Continued from Page 487)

was used effectively to introduce the characters in "Flying Down to Rio." Fig. 19 is another adaptation of the same matte used for Fig. 17. Figures 20 and 21 show a simple but effective use of the common straight-edge matte. This effect is easily made by wiping-in in a different direction than that of the wipe-out. Although rather mechanical, the result is, however, quite smooth and flowing. In "Hips, Hips, Hooray," various forms of this type of wipe were used. The most commented-on type of effect we have made recently is the so-called "card wipe," Fig. 21, used in "Flying Down to Rio." This was developed for a series of scenic shots of Rio de Janeiro, in an attempt to get over the idea of viewing a series of picture-postcards. A special device was designed for these effects, and it was necessary to do a great deal of careful planning before making the shots.

Fig. 22 is an example of how Optical Printing can save many dollars for the studio. In filming "Ace of Aces," Richard Dix's crashed plane was supposed to burst into flames just as he climbed out of it and reached the ground. It so happened that the plane did not flare up until Dix had crawled along the ground and out of the picture. The scene was up for a retake, naturally involving quite an expenditure, when we thought we would try a little 'doctoring' on the printer—to see if we could save the scene. We made a test, dissolving to a split-screen around Dix at the moment he touched the ground. In this split, we dissolved the action of the plane ahead about twenty feet, to the point where it burst into flames, while Dix's action continued on normally. The experiment was successful, and our 'doctored' shot was cut into the picture, saving an expensive retake. At another time, in "Flaming Gold," an objectionable name was noticed on an oil truck moving into an important scene. The Optical Printer was called on to "retouch" this scene. By means of a fine grease-pencil mark on a glass placed in front of the printer aperture, the name was blurred enough to prevent recognition. This glass was slid along frame by frame, to match the movement of the truck. Jobs of this type present themselves regularly.

Many odd and interesting problems are presented to the Trick Department of any studio. Some are extremely difficult, and tax the ingenuity of the Department's personnel to the utmost. During the five years of my experience with the RKO Trick Department, it has been a pleasure for me to work on the problems to which I have been assigned, due to the full co-operation of all its members, and the entire confidence that Vernon Walker, A.S.C., the Department's Head, has in his associates. That trust, together with his method of giving full credit where credit is due, has built around him a smooth-running and efficient department. His own professional ability, too, has won him not alone the homage of others, but the sincere respect of his co-workers in his department. The quality of Optical Printing, variety of special effects, and efficient mechanical design and operation of the printer are by no means a one-man achievement: a world of credit is due Cecil Love, A.S.C., my assistant, and Bill Leeds, the designer of the printer and its accessories. The mechanical developments on the printer and the high standard of Optical Printing it turns out are certainly not the products of one brain, and to these men rightfully goes a large share of the credit for the high standard of work turned out by the RKO Camera Effects Department.

What the future holds for Optical Printing is hard to say, but as studio executives become more familiar with its artistic and money-saving possibilities, as outlined herein, I feel assured that they will take more and more interest in this branch of trick photography. Inevitably, Optical Printing and Optical Printer Specialists will gain higher and more general recognition than they now enjoy.

## Featherweight Blimp Has Many Innovations

(Continued from Page 492)

the camera-lens is also focused upon that object, with microscopic precision, and an accurate reading is also seen on the focusing dial above the finder.

Changing of lenses is simple: the focusing control is brought to the "infinity" position, the matte-box swung aside, the lens is given a quarter-turn, and removed. Similarly, no lens may be inserted unless the focusing mechanism is in this infinity position; and lenses may only be inserted right-side-up. The lens mounts are so designed that they automatically select the proper cams to coordinate the focusing mechanism with the focal length of the lens being used.

The new device was completely designed and built in the RKO studio camera machine-shop. Credit for the design is given to Harry Cunningham, Head of the Camera Machine-shop, who worked in close cooperation with William Eglinton, Head of the RKO Camera Department, and Richard S. DeVol, A.S.C., his assistant.

## Glennon to Fox for "Grand Canary"

• Bert Glennon, A.S.C., has been assigned to direct the photography of the Fox film, "Grand Canary."

## Filters For Special Effects

(Continued from Page 486)

Second only to the family of diffusers is the group of Fog Filters. These produce natural fog-effects under any condition. The No. ¼ stimulates atmospheric haze or mist; the No. ½, a very light fog; the No. 1, a light fog; the No. 2, a medium fog; the No. 3, a heavy fog; and the No. 4, a real 'London fog.' The No. 5, a graduated fog-filter, is often used for cinematographic work, especially street scenes.

These filters do not increase the exposure, and (especially the first three), they may be used at night. In fact, the first of these filters which I made, nearly twenty years ago, gave a night fog effect when a natural fog failed to make any photographable impression!

These fog filters are also excellent for use in photographing backgrounds for Art-titles.

The Neutral Density filters, for subduing glare and strong contrasts, are too well known to require more than mention. They may also be obtained in graduated types, which are very useful. Several miniature experts use these graduated Neutral Density filters on all their miniature shots.

Ordinary graduated filters, graduating from either clear or very lightly-tinted glass at one end to a heavy tint at the other, are equally familiar. Made graduating from one color to another, as from yellow to orange, or from orange to red, they are highly useful in making night and moonlight shots. Several cinematographers have had special filters made, graduated from the green of the 56-B or the X below to a 25-A above: these produce startling effects in the desert, with a highly-corrected sky and a soft foreground.

I have made special filters of this type for the production of some interesting special effects. In the Fox picture "Happy Days," a few years ago, a sequence required that a group of minstrels should change suddenly from normal white men to blackface makeup. This was done by using a bluish-grey makeup, and a long, graduated filter, clear at one end, and a fairly heavy red at the other. Shooting through the clear end, the makeup photographed white; pulling the filter down until the lens was covered by the red end, the blue makeup slowly changed to black. A similar filter enabled another cinematographer to quickly transform an old man into a youth: the aging lines were drawn in blue, which, through the red filter, photographed dark; pulling the filter out until the lens was behind the clear area, the blue lies faded out, and the man became young.

Lastly, the monotone filter—or viewing-glass—is a filter for the eye, not for the camera. It is used in judging photographic light-values, showing highlight, shadow, and colors in terms of black-

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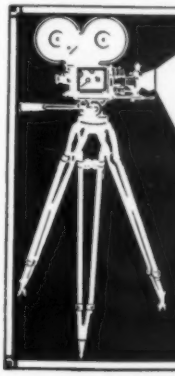

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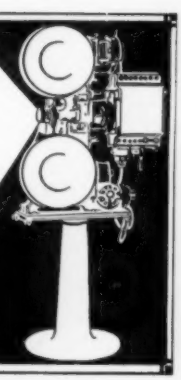

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and-white and halftone. They are available for both Pan, SuperPan and Ortho emulsions. It is often possible to estimate filter-effects by slipping a filter in front of this viewing-glass, and thereby getting an approximate idea of the degree of color-correction you will get with that filter, under prevailing conditions.

## New Lamp Diffuser

• The announcement of a new studio lamp diffuser by the Organic Reclamation Corporation of Hollywood holds considerable interest for the cinematographer in view of the fact that this announcement is accompanied by a test conducted by them by a member of the American Society of Cinematographers.

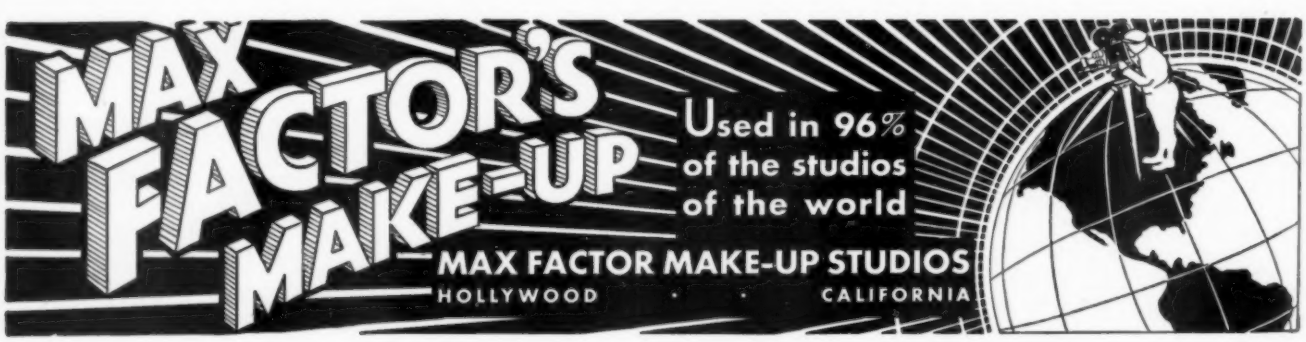
This diffuser is claimed to give the same degree of softness as silk with very little loss of light. The following readings were secured on a Weston Exposure meter for the various types of diffusers: employing a 1000 watt lamp with readings taken in each instance at 8 feet:

| | |
|---|---|
| Without Diffuser | 320 |
| Oiled Gelatine | 200 |
| Cello Glass | 100 |
| Silk | 70 |
| Organic Diffuser | 250 |

These readings would indicate an economy of light, with a maximum of diffusion for the Organic Diffuser. The announcement states the diffusers are made in all sizes.

## Jackman to South Seas

• Fred W. Jackman, former President of the American Society of Cinematographers, and Director of Scientific Research for Warner Bros.-First National, has sailed on the "Tatsuta Maru" for a four-months' cruise of the South Seas. Jackman, Dean of Hollywood Trick Cameramen, signed a new long-term contract with Warner Bros. before leaving, and will combine business with pleasure on the trip, photographing special background scenes for the studio throughout the voyage. His itinerary embraces Japan, China, the Philippines, Indo-China, Java, Bali, New Guinea and the Solomon Islands, New Zealand, and Australia. He is accompanied by Mrs. Jackman and his son, Fred H. Jackman, Jr., A.S.C., and his wife, and Joe Jackman, another son.



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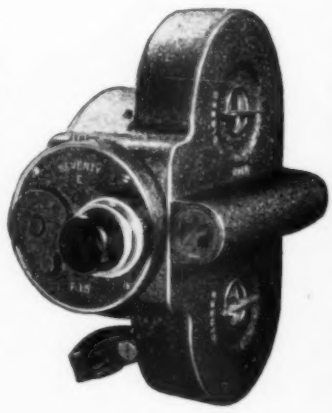

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# AMATEUR MOVIE SECTION

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**• PROFESSIONAL Criticism of the Amateur picture is a part of the service offered by the AMERICAN CINEMATOGRAPHER. Many are not aware of this. Hundreds of pictures have been reviewed this past year by members of the American Society of Cinematographers for the Amateur.**

## Next Month . . .

• A Professional Looks At 8mm. Arthur Miller, A.S.C., who has taken the 8mm under his wing, will tell you the things that can be done with this little camera

• Backyard Movies will continue to be given to you. . . . The type of stories anyone can shoot in their backyards, right in their own neighborhood.

• Some common sense technical articles will be offered, things within the range of the 16mm and 8mm camera.

**Cine-Kodak and "Focal Frame" in action. The butterfly will fill the picture.**

# Nature Photography With Cine-Kodak

By

**Walter Blanchard**

(Abstract of a communication from J. W. McFarlane, of the Kodak Research Laboratory, Rochester, N. Y.)

THE principal restrictions as to subject-matter for 16mm movies are now the cost of the required equipment, and the ease with which that equipment can be used. The amateur does not, as a rule, buy expensive accessories, nor can he spend much time on his hobby; and most important of all, he will not be bothered with complicated equipment. It is therefore evident that to make successful the photography by amateurs of subjects beyond the scope of existing amateur cine cameras, the additional equipment must be either inexpensive or easy to build; it must require no setting up; it must be easy to use, and yield good results in unskilled hands. The most desirable, perhaps, would be the adaptation of existing accessories to new uses which would extend the capabilities of the camera, without additional outlay or difficulty.

Table II

Data for 16 mm. cameras with 25 m.m. lenses, and 8 mm. cameras with 12.5 mm. lenses

| Photographing Distance d | | Field Size hxb | | Displacement e | | Supplementary Lens L | |
|---|---|---|---|---|---|---|---|
| cm. | Inches | cm | Inches | cm | Inches | | |
| 100 | 39 | 30x40 | 12x16 | 15 | 6 | 1.0 diopter | |
| 50 | 19-1/2 | 15x20 | 6x8 | 7.5 | 3 | 2.0 " | |
| 33 | 13 | 10x13.5 | 4x5-1/4 | 5.0 | 2 | 3.0 " | spectacle |
| 29 | 11-1/4 | 8.6x11.4 | 3-3/8x4-1/2 | 5.0 | 2 | 3.5 " | lenses |
| 25 | 10 | 7.5x10 | 3x4 | 3.8 | 1-1/2 | 4.0 " | |
| 20 | 8 | 6x8 | 2-3/8x3-1/8 | 2.5 | 1 | 5.0 " | |
| 15 | | 4.3x5.0 | | 0 | | 100 mm focal length | Camera |
| 10 | | 3.0x4.0 | | 0 | | 100 " " " | |
| 7.5 | | 2.25x3.0 | | 0 | | 75 " " " | macro |
| 5.0 | | 1.5x2.0 | | 0 | | 50 " " " | lens |
| 2.5 | | 0.75x1.0 | | 0 | | 25 " " " | data |

The most important problem in applying the Cine-Kodak to nature photography is focusing on small objects. The Cine-Kodak is at present equipped to focus on objects from infinity to two feet. It is not calibrated for shorter distances, due to the fact that the depth of focus decreases rapidly as the plane focused on approaches the camera, and it becomes impractical to estimate the subject-distance accurately enough to insure sharp focus. Moreover, the finder systems available at the present time are not valid for very short subject distances, because of the displacement of the finder axis from the camera lens axis. Overcoming these afflictions will permit the application of the Cine-Kodak to nature photography. Classified according to focusing distance and field size, there are four subject classes in nature photography:

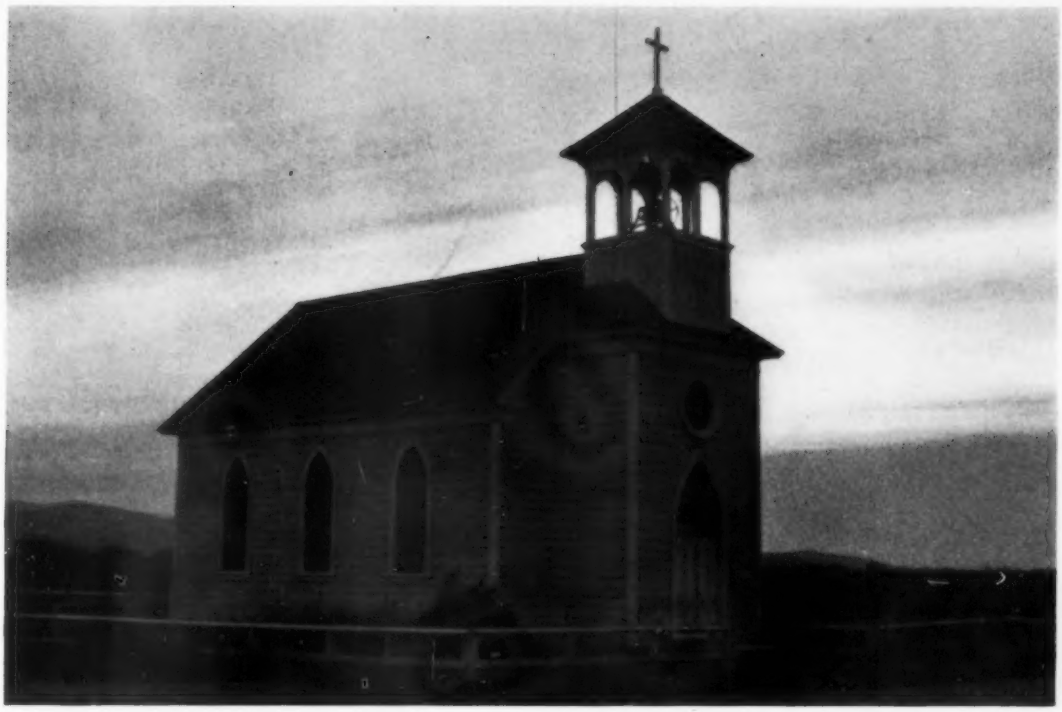
1. Normal objects at normal distances, which can be photographed without additional equipment.
2. Small objects, normally examined at about ten inches. The majority of subjects fall in this class.
3. Small objects, which cannot be closely approached, for example, birds. This class can sometimes be photographed with telephoto lenses.
4. Very small objects, normally examined through a magnifying-glass.

The second and fourth classes—normally beyond the range of amateur cine cameras—can be photographed successfully by means of an attachment comprising a wire frame which defines the subject-area and plane, together with a supplementary lens which refocuses the camera upon the desired plane. The frame serves both as a finder and a focusing device of high precision, and since it is outside the picture area, it does not show in the picture. The accessory known as the Cine-Kodak Titler can be used for this purpose. The easel which takes the title card forms the frame, and does not show in the picture. The focus comes exactly at the frame, and the field size is 2⅛x2¾ inches. This is, however, rather small for most subjects. Titling stands of similar principle, though of different manufacture, may be used, too, either with the Cine-Kodak or with other 16mm and 8mm cameras.

Such a device may very easily be made by the amateur, however, with a wooden base, a simple wire frame, and an ordinary spectacle lens. It will serve not alone for nature photography, but for making many types of extreme close-ups for industrial or educational films and photoplays, and

(Continued on Page 515)

**Close-up of a frog, made with Cine-Kodak and "Focal Frame."**



# Color and the Miniature Camera

By

**Clarence Slifer, A.S.C.**

WITH their customary progressiveness and enthusiasm, those interested in the miniature camera have turned to color photography as the next field to conquer, with this most versatile photographic instrument. Strangely enough, miniature negatives were used in color photography before miniature cameras became popular. In 1923, a very ingenious color camera was placed upon the market. This camera was known as the Raylo camera. It made color pictures by the three-color separation principle. Each negative in the separation measured 1 by 1½ inches, or identically the size of the present Leica and Contax negatives. From these miniature color separation negatives, enlarged color prints were successfully made in any desired quantities.

As there are a number of color processes that may be used with the miniature camera, it is the purpose of this article to acquaint you with some of the most prominent and successful ones. Perhaps the oldest, successful color process is the Autochrome process. This is strictly a transparency process, the resulting pictures being viewed either by transmitted light or by projection. Recently the Autochrome emulsion has been coated upon a film base and is now known as Filmcolor. It is also supplied on 35mm perforated film, this film being suitable for use in the Leica and Contax cameras.

The principle by which this film makes pictures in natural colors is very interesting. The only special equipment required to use this color film is a special lens filter. This compensates for the difference between the visual value of certain light rays and their actinic effect upon the sensitive film coating. Although Filmcolor is a single film, it is made up of two distinct coatings: the color screen and the emulsion. The color screen is made of microscopic, dyed starch grains. This screen in reality is a mosaic of myriads of tiny filters: red, green, and blue and in perfect balance. There are approximately 6,000,000 of these filters to a Leica frame. This trichromatic mixture of starch grains is spread upon a celluloid film base. Over this color grain coating is applied a protecting varnish. Then upon this, is coated a thin, highly sensitive panchromatic emulsion.

This color film is loaded in the camera with the celluloid side towards the lens (the reversal of normal black and white procedure). This permits the mosaic color screen to act as a filter for the panchromatic film. It will be seen, that these minute filters will pass some color rays wholly, or partially, or stop completely, depending upon the color of the light ray and upon the color of the grain or grains that it falls upon. In this transmitted ratio they affect the panchromatic emulsion. This negative emulsion during the course of developing and processing, is reversed, thereby becoming a positive. Now, when this positive is viewed by transmitted light, it permits the light to pass through the color screen in the exact and original ratio, thus giving a picture in natural colors.

With fast lenses (f:2.3, f:2, etc.) snapshots are possible in bright sunlight. Duplicate transparencies may also be made. It is presumed that with the Leica transparen-

(Continued on Page 517)

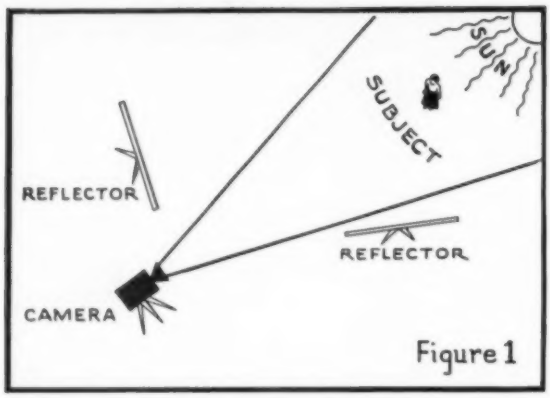


Figure 1

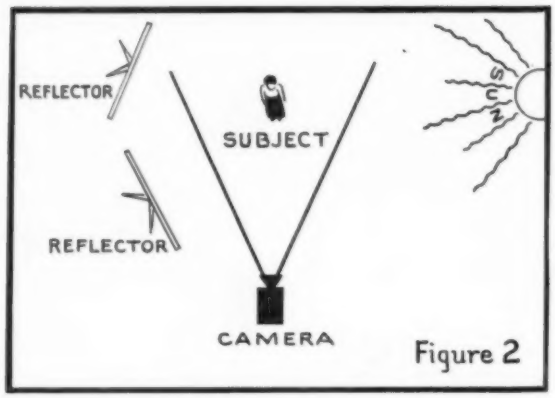


Figure 2

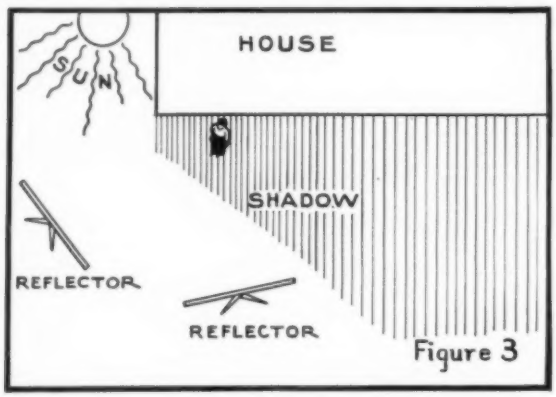


Figure 3

# The A-B-C of Outdoor Lighting

By **Arthur Campbell**
Cinematographer

LIGHTING, to many people, simply means the use of artificial illumination for making pictures indoors. When you set up your camera outside, they reason, the sun does the lighting for you—all that is left for the photographer is to set his lens and turn his crank; the lighting takes care of itself. Nothing could be more wrong than this conception of lighting! If light obeys certain laws indoors and the photographer, by applying those laws, can make his pictures better, why should he not similarly improve his pictures by applying the same laws of lighting to exterior photography?

True, there is but one basic source of light outdoors—the sun. But—as every small boy learns by playing with mirrors and tinfoil—sunlight can be reflected. It can be thrown into shadows, moved about from one angle to another with exactly the same assurance—and the same effects—that we get indoors by using several sources of light. And if good lighting will improve interiors, it will surely do the same for exteriors.

When we first started this discussion of lighting, several months ago, we found that the average amateur lit his interior scenes too flatly—simply set up a light or two in front of the subject, to give an even illumination from the front, and fired away. Well, the same thing happens when he makes an exterior: most of us began our photographic experience with little "Brownie" cameras—and we still remember that the "Brownie" instruction-book called for a flat front-light, with the sun behind the camera. We've carried the same idea over into our movie-making. But the home-movie camera—16mm, 8mm, or 9.5mm—is blessed with faster lenses, and uses faster film than did our boyhood "Brownies." Therefore, we can forget the old rule about keeping the sun behind us, and branch out into lightings that really give us good pictures.

Some of the advanced amateurs have already reached step No. 1 in outdoor lighting. They have moved the sun around from behind the camera to one side or the other, giving a more pleasing lighting, professionally known as "cross-lighting." That is all to the good—but they haven't put anything into the picture to offset the harsh shadows thrown by this type of lighting. We find that the sunlit side of the face is strongly lit, and the opposite side is strongly shadowed. But if we can reflect some light into those shadows, leaving that side shaded, but still with enough light reaching it to give a nice luminous shadow, we have a really pleasing, natural light-effect.

How are these reflectors to be made? Really, it's simple. Almost anything that will throw back some of the light that falls on it will do—in a pinch. I've known of professional cameramen who, in an emergency, used ordinary bedsheets for reflectors! But the best reflector for amateur use is one made of a piece of ordinary compoboard, with one side coated with either gold or silver foil. For a long time, silver-coated reflectors were used exclusively; but since the introduction of Panchromatic film, gold has become more popular. Therefore, I would advise the use of gold-surfaced reflectors. If you wish, you can protect the reflector with a wooden moulding along the edge; and a hinged wooden leg, by which the reflector may be braced, to stand at any desired angle, is extremely useful. And of course, if you are a particularly good carpenter, you can make your reflectors book-shaped, so that they will fold when not in use, protecting the reflecting surface. Folding reflectors, by the way, can be made smaller, and so, handier to carry.

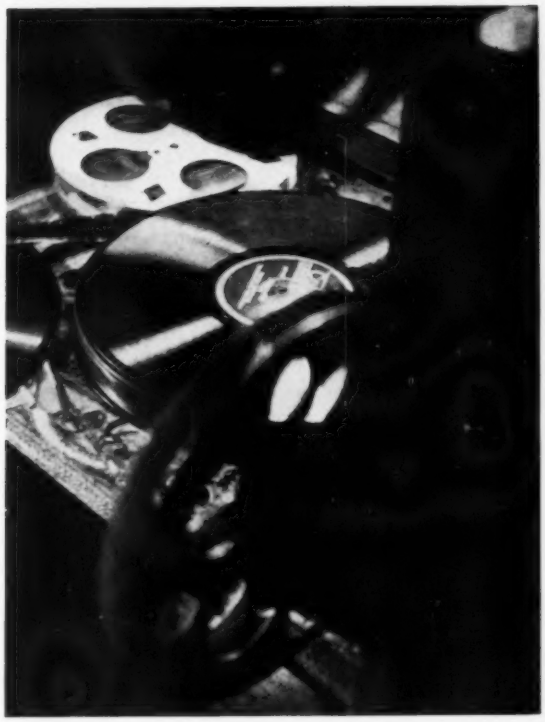
Now for using them! Sketch No. 1 illustrates back-lighting. The subject stands with his (or her!) back to the sun—notice how nicely the sunlight, coming from this angle, will outline the contours of the body and the hair. Now, place a couple of reflectors on either side of the camera, to reflect the light on the face of the subject.

(Continued on Page 514)

# Show It With Music

By

**William Stull, A.S.C.**



BEFORE the movies learned how to talk, one of the greatest aids to the de luxe presentation of professional motion pictures was the musical accompaniment. Until the advent of the Vitaphone, all of the great film theatres maintained large, symphonic orchestras, expert organists, and highly skilled arrangers and thematic-score writers—all for the purpose of being able to give each scene of each picture the best and most fitting musical background. For the right music, rightly played and rightly used, can be of tremendous value to any film: it will create a sympathetic emotional response in an audience, heighten the value of any scene—and sometimes improve the response to a film that might otherwise be coldly received.

The same method is well worth adapting to the requirements of amateur showings. Of course, actual orchestras and organs are out of the question, and most of us are but poor performers on any instrument—but there is always the faithful phonograph, which brings us the finest of music, to use when and how we will. Moreover, it can bring the makers of travel films the national music of any land—the real music of the South Seas; the weird cadences of a Balinese "Gamelan" orchestra; the dissonances of genuine Chinese, Egyptian, or Arabian music, which, rightly used, can add immeasurably to the atmosphere of any travel reel.

The mechanical adaptation of the gramophone to the purpose of accompanying home movies was discussed last month; it will be remembered that while the ordinary, electric-reproducing phonograph will serve acceptably, the best results would follow the use of a non-synchronous, theatre-type machine with two turntables, a fader, and—if possible—indicating needles attached to the pickup arms, so that one may accurately choose any definite part of a record, starting and stopping at exactly the desired place.

Regardless of the physical equipment used, the most important thing, obviously, is to have the right records—the most fitting music, perfectly played and recorded. Fortunately, each scene or sequence in a picture will fall under some arbitrary classification as to mood and action; so, having music suited to these various moods, one can rest assured of having music suited to almost any requirement. Working from this basis, a large collection is by no means necessary—a skeleton collection of fifteen or sixteen records is enough for a start—and, as time goes on, the library may be increased, giving greater variety in theme-arranging, and building up a collection of recorded music which will be, quite apart from its cinematic utility, a source of lasting pleasure.

From the outset, several courses are possible. First of all, one may decide to concentrate on either orchestral or organ accompaniments; this is, of course, purely a matter of taste. It would, however, be wiser to concentrate on one or the other exclusively, until one was ready to more or less duplicate the collection, eventually having similar music by both orchestra and organ for every mood or situation. A certain number of band recordings will often prove useful, as will some types of instrumental solos, such as violin, 'cello, and string bass. Vocal selections should obviously be avoided. The backbone of any scoring library should be the orchestra and the organ.

For such purposes as this, foreign-made recordings are often more suitable than the domestic product. In the first place, the majority of domestic record firms have lately been concentrating on dance-music, which is seldom suitable to film accompaniments. Foreign orchestras and producers, on the other hand, have continued to record not alone the more familiar classic and semi-classic concert music, but have released many delightful recordings of selections virtually unknown here—and therefore often more suitable than the more hackneyed pieces commonly heard. England and Germany are the best sources of such records. For organ records, one must indisputably go to England; for not only do the British firms have a greater variety of organ selections, but their records are recorded by a far greater variety of artists. For strictly national music—such as Chinese, Egyptian, Javanese, etc., not to mention the more familiar Scandinavian folk-music, and the like—the foreign catalogues offer the traveller tremendous resources. Two American firms—RCA-Victor and Columbia—have extensive foreign branches, and can supply either direct or through their importation service, a vast amount of interesting music of this type.

It may also be mentioned that European records are, as a rule, recorded to a somewhat lower volume-level than is common here, and with less tonal distortion than our American records, which are inclined to artificially accentuate the bass register; there is otherwise very little choice between the two, as to quality. Several firms in this country carry extensive stocks of foreign records, and import anything on special order, handling all matters of shipping, customs, etc. Such importation requires about three or four months, as a rule; and imported records cost approximately one-third

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**Title Stand For 8mm or 16mm use.**

# Cine Synthesis

By

**Wm. J. Grace**

(Author's note: In the preparation of this and subsequent articles on 8 and 16mm work, it has been found practical and expedient to illustrate by pictures and descriptions actual devices and equipment developed by myself along these lines. It is hoped that my readers will accept the information found in these articles for what they are worth, and that it will not be looked upon as subtle advertising for my own products.)

SYNTHESIS means the building up, piece by piece, of component parts into a whole. Cine synthesis means building up a motion picture frame by frame instead of at the normal speed at which movies are usually taken. Since frame by frame work encompasses so large a field the general principles upon which single frame movies are made will be discussed and then various aspects of the art will be taken up one by one.

When an amateur thinks of single frame work, the first thing which pops into his head is animated cartoon work. Immediately, he visualizes great quantities of special equipment which he feels are beyond him financially. Fortunately, however, single frame work is no more out of the reach of the amateur than any other type of movie work. He must bear in mind that he must learn to crawl and walk before he attempts to run. Until he learns the principles underlying single frame work, the amateur will do well to undertake only the simplest form of the work, namely, the animated title.

Animation, you know, means merely to apparently imbue an inanimate object with life. If a movie title is animated, the words and letters may be made to move about on the screen as if they were living beings—oddly shaped bugs trained to spell titles.

Since this article concerns itself solely with 8 and 16mm amateur work, we will assume that the projection speed of 16 frames per second is to be observed. Also, in this and other articles on amateur cine work, we are going to base all our calculations on frames per second and total number of frames. This is to eliminate any confusion which is bound to arise in speaking of feet of 8mm film and feet of 16mm film. The frame and second are universal yardsticks for cine measurement, regardless of film width or picture size.

In determining the proper timing for animated movies, the amateur will do well to emulate the effects used by the professional. We are taught from childhood to study the writings of the experienced—does it not follow that from the experience of those who earn their living making animated movies the amateur can learn much? The amateur who really wants to learn the secrets of animation timing has at hand some very good examples of almost every effect he might want to employ in the work seen on the screen of any theatre.

Since it is difficult and impractical to read a watch in a darkened theatre, an easy way to tell time or count seconds is to say slowly and distinctly beneath your breath—"one hundred and one, one hundred and two, one hundred and three———." It is really surprising how closely seconds may be mentally ticked off by this scheme. Try it with your watch before you.

Perhaps at some time you have seen on the professional screen a title which started out with the letters all jumbled up, scampered about on the screen for two seconds, and then marched into positions which spelled the title. We'll assume you want to use this on the picture of the World's Fair you made last Summer.

Set up the camera on a vertical support and, after determining proper focus and exposure, lay all the letters appearing in THE WORLD'S FAIR on the title area. You might use small cardboard or metal letters, or you might buy a package of alphabet soup characters (they come in packages containing at least 10,000 letters for a dime)—any letter which can be moved around. Use wooden letters if you wish. Paint the letters to contrast with the paper background of the title, or select a paper or photograph background which contrasts with the letters.

Now, determine how long the title is to run. A good plan is to allow the letters to "jumble" for about two seconds—a longer period may bore the audience and a shorter one may confuse them. Allow another second for the letters to assume their position to spell the title, then allow two seconds more for the completed title to remain on the screen to be read. This timing is merely a suggestion. Perhaps you might want to slow it up or make it in a faster tempo—your own experience will dictate your own timing.

Our timing requires that the letters scamper about haphazardly for two seconds. This means 2 times 16, or 32 frames must be exposed. Expose one frame at a time, moving each of the letters a little at a time between each exposure; do not try to move them too far at one time or

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# Have You A Watchmaker In Your Home ?

By **J. Dickinson Reed**

ONE of the basic comedy situations is that in which innocence outrages dignity. Things of this sort happen with disturbing regularity in every home where there are children: at the time, they don't always seem funny; but afterward, when ruffled tempers have calmed, such incidents usually become cherished memories, the foundation of cycles of anecdotes about the cute ways of "Our Baby."

So why not make a home-movie of such an occurrence? For instance, the time when Junior tried to fix Daddy's watch. . . . Of course, putting a valuable watch in such a perilous situation would call for too great a devotion to one's Art—but a dollar Ingersoll will do just as well, without straining the budget. It is the only "prop" necessary for making this little photoplay, which can be staged in any home, with things that are to be found in every household. Here it is:

THE WATCHMAKER
Cast of Characters

Junior.....Hasn't voted yet—but what a mechanic!
Father.....Slings a wicked wrench
Rover.....Specialist in second-hand bones

Scene 1. FADE IN. Long-shot of car, outside the family garage. The hood is raised, and from underneath the car, a pair of feet stick out.

Scene 2. Close shot of the feet.

Scene 3. Under the car. (Use a reflector!) Father is seen busily at work, repairing the car. As he unscrews a bolt, the wrench slips, and his wrist strikes the crank-case. He stops, feels of his wrist, then decides that his wrist-watch will be safer if he takes it off. He starts to remove it.

Scene 4. Close shot of running-board of car. Father's hand comes out from underneath, groping around, and finally deposits the wrist-watch on the running-board. FADE OUT.

Scene 5. FADE IN. Medium long-shot of the back door. Junior comes out, followed by Rover. Junior has two doughnuts in his hands; he gives one to the dog, and wanders along, munching his doughnut.

Scene 6. Long-shot of back porch, showing driveway. Junior enters, followed by Rover. He stops a minute by his tricycle, but it doesn't interest him; he wanders on, in an aimless zig-zag, coming toward the camera. He is plainly bored.

Scene 7. Under the car. Father is still working. (The angle for this is the reverse of Scene 3—i.e., shoot from Father's head). On the other side of the car, we see Junior's feet approach, and stop.

Scene 8. Close shot of Junior—shot through the car. He surveys the array of tools, etc., on the running-board. He begins to show a little interest. Have his head turn from camera left to right.

Scene 9. Close-up of the running-board. It is covered with a litter of tools, parts, etc. Pan from right to left; stop with the watch centered.

Scene 10. Close-up of Junior. A Big-head shot. He sees the watch, and is very much interested.

Scene 11. Close-up of the watch. Make this short—about three feet.

Scene 12. Close-up of Junior, as Scene 10. He makes up his mind to do something.

Scene 13. Close-up of the watch, Junior's hand comes in and picks it up.

Scene 14. Long-shot. Junior, carrying the watch, walks away from the car.

Scene 15. Close shot of Junior, sitting in the grass, examining the watch. He looks at it—holds it to his ear—shakes it—and listens again. He looks down, camera left, and speaks.

TITLE: "SOMETHING'S WRONG, ROVER, LET'S FIX IT!"

Scene 16. Close-up of Rover; he barks once.

Scene 17. Long shot. Junior runs over to the car, selects a hammer and a chisel, and runs back. This can be a pan shot, with the camera following Junior.

Scene 18. Close shot. Junior places the watch on a large stone, and tries to open it with the chisel. Rover sits beside, watching intently.

Scene 19. Close-up of Junior. He is intent on his work—his face is all screwed up, his tongue between his teeth, etc.

Scene 20. Close-up of Rover. He is intently watching Junior's work. Make these two scenes very short.

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# WHEELS OF INDUSTRY

**Victor Sound Library**

• The announcement of Victor Animatograph Corporation, Davenport, Iowa, that the well-known ERPI Education Films, including those made at the University of Chicago, are being released in 16mm Sound-on-Film will undoubtedly prove of interest to visual-minded educators for the reason that the availability of 16mm Sound Films such as these will have a decided influence on the rapidity with which the transition from silent to sound projection will be effected in the educational field.

The production of the 16mm sound-on-film prints of these films is being handled by the recently established Film Division of the Victor Animatograph Corporation at 242 West 55th Street, New York City. Prints will be offered for outright purchase by Victor, and it is understood that a number of sources such as Visual Instruction Departments of State Universities will offer rental service.

**New Leica Lens**

• According to announcement from E. Leitz, Inc., the long promised 50mm Summar f.2 lens in collapsible mount for Leica camera is now ready. This lens is said to embody several outstanding characteristics, among which might be mentioned its color correction and crisp-sharpness, even at its widest aperture. It is claimed this lens does not suffer from aberations which are usually associated with speed lenses, among which softness at large apertures is a disturbing factor.

**Madison Mart Opens**

• Under the firm name of Madison Mart, Inc., P. A. Lins, E. F. G. Herr and Wm. A. Kunze, formerly with Herbert & Huesgen Company, have opened the Madison Mart at 403 Madison Avenue, New York City, for the purpose of dealing in Cine and still photography equipment.

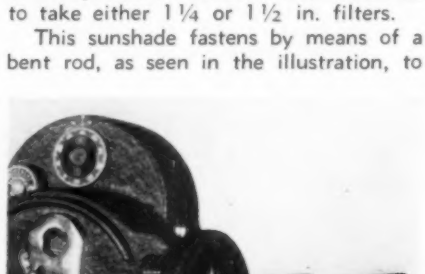
**New Amateur Lights**

• According to an announcement from Wm. J. Grace of Dallas, Texas, he is marketing a new light unit which will accommodate from three to four lights. A fine feature of this unit is the fact that he has also designed a switch which will give either dim or bright lights. This means a great saving in both current and photo-flood bulbs as the dim switch can be thrown over while the lights are being lined up and the bulbs may be burned at their highest efficiency only during the actual photographing process. Another fine feature is the "spill ring" which is available with this outift. This concentrates the light more within the photographic range. It is a feature which the professional studio has used regularly.

**Harrison Sunshade**

• So built as to fit on either still camera or 16mm camera, Harrison and Harrison of Hollywood announce a new sunshade to take either 1¼ or 1½ in. filters.

This sunshade fastens by means of a bent rod, as seen in the illustration, to



the filter holder and then to the camera, fastening in the tripod-screwhole. The bolt with which this is fastened is drilled so that it will take the regular tripod-head bolt. It is adjustable both sideways and forward and backward.

**New Rental Library**

• The Visual Instruction Supply Corporation is a new entrant into the Film Rental Library field. The corporation announces the institution of a National 16mm Film Rental Service created especially to serve the school and church field.

This service is available anywhere in the United States and Canada. Address all inquiries regarding this service to Visual Instruction Supply Corporation, 1757 Broadway, Brooklyn, New York.

**New 16mm Film**

• An announcement that is of exceptional interest to the dealer as well as to the 16mm user is the one put out this month by Agfa Ansco of their 16mm Plenachrome Fine-grain film. This will sell for $4.50 for 100 ft. and $2.75 for 50 ft. This new film will have the popular Plenachrome emulsion which has been used successfully by this firm on their still film negatives for so long. The Agfa Ansco Company claim extremely fine grain and more than usual latitude for this film. While it is not panchromatic, it is sensitive to all colors except spectral red. It is fully orthochromatic. They claim it is more brilliant than Panchromatic and they state in their announcement that it has the Agfa anti-halation coating. Its speed in daylight is approximately that of regular Reversible Panchromatic.

**Chicago Victor Office**

• The Victor Animatograph Corporation is opening an office at 188 W. Randolph St., Chicago, under the management of Don B. Oliver. This office will act as a display for all Victor equipment and will have projection for silent and sound pictures. A service man from the factory will also be installed in this office to assist Oliver.

**16mm Sound Library**

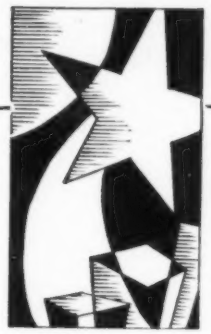
• Among the first to announce a 16mm Sound on Film Library is Willoughby in their recent circular which lists six cartoons, five Aesop Fables, six Travelogs, ten Musicals, three Music Classics and four Miscellaneous subjects.

According to the announcement these subjects will rent for $1.50 a reel, with each reel approximately 400 ft. in length.

**B & H 16mm Titles**

• For those 16mm film users who haven't the time or inclination to make their own titles, Bell & Howell is introducing what is styled "Title Craft" service.

The pictorial titles, if of ten words or less, are 75c each, plus 4c for each word over ten. Titles on plain or on the textured backgrounds shown in the book are 45c, if of ten words or less, plus 4c for each word over ten. The quoted prices include filming, developing, and delivery to the customer of the finished title film strips ready to splice into his films. Main titles in suitably varied type sizes are supplied at no extra charge.



# BACKYARD MOVIES

## "Diary of 1934"

So often we amateur movie enthusiasts discover rather suddenly a dearth of ideas as well as an actual shortage of cash for the ever-important item of film. It is a very simple matter, however, to cure both of these ills. The obvious answer to the shortage of money is to budget it, allowing yourself a definite amount to buy film throughout the year; but if this is to work out successfully, you should budget your ideas, too. It seems to me that the beginner can do nothing better than to plan his year in advance, with the idea in mind that at the end of twelve months he will have four hundred feet of film representing the highlights of the year—a vivid diary of the most important happenings. Like most diaries, it should prove of interest to all who are privileged to view it.

Moreover, a film diary is a marvellous way of utilizing "orphan film"—all those disconnected shots of people and places every movie-maker accumulates during the course of a year. Strung together in more or less chronological order, with clever titles, such otherwise wasted film can easily be made into a most interesting reel, excellently suggesting WHAT you did, WHERE you did it, and WHO you met during the year. Try it on those stray shots you have left over from last year's shooting! It is sure to work out so successfully that you'll want to try making a definitely planned film diary of this year's events. Here's how to do it.

Think of the pattern of the whole year—how it affects you personally—and plan your film accordingly. There are certain definite activities and events that stand out: certain fairly fixed holidays, vacations, etc.; then there are certain equally definite family celebrations—birthdays, wedding anniversaries, and so on; then there are special, unforeseen (but important) events—visits from old friends, schoolmates and the like; and lastly, there are definite "news events," both family and local—weddings, graduations, family reunions; fires, floods, wrecks, and visits from prominent people. All of them stand out in your memory (some, of course, more than others)—and so they should by all means be represented in your film diary.

## Movie Film Free

**Otis Wade of Los Angeles gives us a practical idea for the use of the 8mm or 16mm camera. Here is an idea that everyone will find practical—especially for those shots that were taken at random. Wade, of course, gets the roll of Panchromatic film. Read his suggestion over—see how simple it is, but how practical. Then try your hand at winning a roll of film free. Send your suggestions to the Editor.**

The first event might center around New Year's Day, and how you began the year. Next there will probably be an outing some fine Spring week-end—and don't forget that the ladies always like to show off their new Easter bonnets! Often you'll have an interesting outing around the Fourth of July or Memorial Day. Film it! For your summer vacation, you may go camping, or make a motor-tour; or perhaps you'll spend the vacation at the beach or in the mountains. In the Fall, the men of the family are likely to go hunting—and the camera should go with them. Hallowe'en and Thanksgiving are both, as a rule, observed with some celebrations—especially if there are children in the home; and both offer interesting film material. And of course Christmas Day (or perhaps New Year's Eve) will end your reel. In between these subjects, you can naturally put all of the intimate, personal events that don't fall under any arbitrary classification.

The "news" subjects—unexpected visits from old friends, weddings, graduations, or outstanding local events, can either be cut into the reel in their chronological order, or grouped at the end of the reel in their chronological order, or grouped at the end of the reel. It might not be a bad idea, also, to have at the end of the reel about fifty feet of close-ups of your best friends—something like the "personalities in the news" section of newsreels. These, of course, can be made at any time during the year.

So much for the ideas!

Now for the film! As a rule, it will only be necessary to get one roll of SuperSensitive "Pan"—this for the interiors on Christmas and New Year's Eve. For the rest, you can get very good results on the cheaper grades of film—even Ortho and the cheap "Semichromatic" types; provided, of course, that the daylight is always good. If you allow about $18 for the 400 ft., your budget will only have to call for an expenditure of $1.50 per month for film. Often, 50-ft. rolls will be more satisfactory than 100 ft. lengths, as you can get your pictures developed sooner, avoiding any possibility of film left in the camera deteriorating.

The titles need only be of the simplest "date-and-place" sort—brief and to the point; a means of identification in later years. Titles introducing groups, however, should list the names of everyone shown, lest some be forgotten later on. Most of these titles can be made on short ends of film left on the roll after you have finished your scheduled scenes.

The idea just outlined is a film diary in its simplest form. It can be expanded to almost any degree you may find advisable; but bear in mind always the fact that it will be more interesting if there are perhaps fewer subjects, each of which is well planned and well photographed than if there are more subjects, but haphazardly planned and poorly photographed. Such an idea can naturally be expanded to include much more than the suggested 400 ft.; but it is not advisable to attempt to make it shorter, as it would become too sketchy. To get the best results from the idea, with the minimum expenditure, study the technique of the newsreel; plan and photograph each subject with the idea of making each shot tell as much as possible—getting the "meat" of the subject quickly, then passing on to the next. To expand, you can either show more details of each subject, or cover more subjects—including things which are interesting, but not, perhaps, of the absolutely highest importance, such as current events not so directly connected with your own activities. Always, however, remember that the essential interest of any diary is the personal element—its recording of what happened to the diary's author and his intimate circle.

If you wish, too, you can add titles more intricate than the simple ones suggested. Double-exposure, with a calendar background, for the main title; hands tearing off calendar-leaves for the titles introducing the various events. Titles that wipe or fade on and off—you can easily imagine dozens of such ideas which, while they may take more footage, and be harder to make, will nevertheless add to the effect of the picture,

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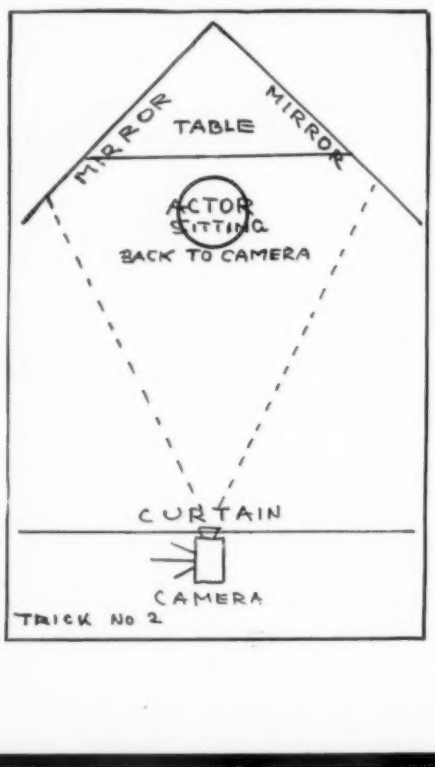
# Multiple Exposures–Without Rewinding–For Amateur Cameras

It is not very hard for a professional cinematographer to suggest all sorts of practical camera-tricks to the amateur—if he will exercise his memory. After all, most of today's professionals can remember the days when the best of professional cameras were less adaptable than are today's amateur cameras—even the simplest 8mm ones. It is really surprising how much can be done with a modern amateur movie camera, without any added trouble or expense.

Knowing that all home-movie makers have at least a secret hankering to make their films different from those of their fellow cineastes, we herewith suggest a pair of simple tricks which can be made with any amateur movie camera. Like a stage 'magician's' act, "it's done with mirrors!"

Trick No. 1 is explained by sketch No. 1. It gives an interesting triple-exposure effect—without the necessity of rewinding, or matching mattes. Place two mirrors at the exact angles indicated by the sketch, placing them on a solid table. Frame your picture according to the outline indicated by the dotted-line. Use whatever action you want—and there you are! Yes—that's all there is to it! But it doesn't look so simple on the screen.

Trick No. 2 is explained by the other sketch. It's just as simple—and even more effective. Another triple-exposure effect that can be made at one "take." Your actor can sit down and play a game of bridge with himself, for he will be plainly visible in the picture three times, and from three different angles. This trick is especially well-adapted to use in a plot of some kind. And still there's no rewinding. You simply place two mirrors at the angles indicated, place the subject with his back to the camera, and his hands on the table, and shoot. Your camera must be hidden behind a black screen or curtain, with only a tiny hole cut through for the lens—and you'll get the best results if you are careful not to let any stray light strike the mirrors directly.




Yet another trick, which may be done with the same two mirrors, multiplies a single man into a whole row—a single soldier into a regiment. Place the subject between two parallel mirrors, and shoot past the nearer one, so you get an actual side-view of the man, his reflection from the first mirror, and the re-reflection of his image in the second. If the angles are right, you can get the effect of a long line of identical people, though, of course, the details of costume are alternately reversed.

Try these simple stunts—and see how many questions your fellow enthusiasts ask you when you screen the pictures!

## Making Your Own Reels

• A suggestion comes to us from J. R. Nixon of Illinois of how to make your own 400 ft. 16mm reels.

The idea came to him as an emergency expedient. He cut from an old 400 ft. film can the cover and bottom, leaving enough metal so as to flange it over to avoid rough edge. Then he took one flange off of a 100 ft. reel such as comes to you with the return of your film from the laboratory. He cut a round hole bigger than the one in the original 100 ft. reel. Then he cut small holes where the flanges come through from the hub. He then cold soldered the 100 ft. flange on this big flange made from the can and placed it back on the hub. He used a knife, he tells us, to cut these holes in the aluminum. Trying to chisel this out makes the metal bend.

He also says he cut a wedge over the threading slit so as to make threading easy. He suggests that a lot of holes be bored in the metal if it is to be used permanently so as to permit the moisture from the humidor can to reach the film.

His final suggestion is the use of cardboard instead of the metal cans for purely permanent 400 ft. reels.

## Effects With Projector

• Lester Johnson of Maywood, Illinois, felt his pictures would have been improved in many cases if he had as much foresight as he had hindsight after viewing his efforts.

An idea struck him one day. Why not matt off some of the objectionable

SKETCH Neil

stuff in the projector! The first thing he tried this on was a horse race. He made a mat to fit over the aperture of the projector right in back of the lens. He made this first one in the shape of a binocular and the effect was that you were viewing the race through field glasses. When he pulled this mat out while the projector was running it gave the effect of a wipe-off.

So he experimented further with keyholes, diamond shapes and other shapes that the picture, scene or occasion called for.

Johnson says it works fine. He does not give details of the slide he constructed for his gate. Possibly it would be best to experiment by just holding one of these mats up to the gate before making any alterations.

## Filter Holder For 8 or 16mm

Again Raymond Harvey comes forth with a gadget that is not only simple but practical. It's a filter holder that can be adapted to the 8mm and to some of the 16mm lenses.

The basis of this holder is the type of strainer you buy at the 5 and 10 cent store for the kitchen faucet. If you will take your lens with you you may possibly find one of these strainers that will fit exactly. However, if it doesn't it is a simple matter to shim up with tape or cardboard to make it fit the circumference of the lens.

You then secure some of the thin wafer glasses used with microscopes. These will cost about 25c a dozen. You take the screen out of the strainer. Secure some gelatine filters cut to the size of the wafer glass—place a glass on each side of the filter, place in the strainer, replace the washer and your filter holder is ready.

If you want to build a sunshade on this holder, you can pick up one of the black composition drinking cups in the 5 and 10, cut a hole in it the size of your faucet strainer, using a pocket knife. Solder it on with liquid solder and you now have the filter holder shaded.

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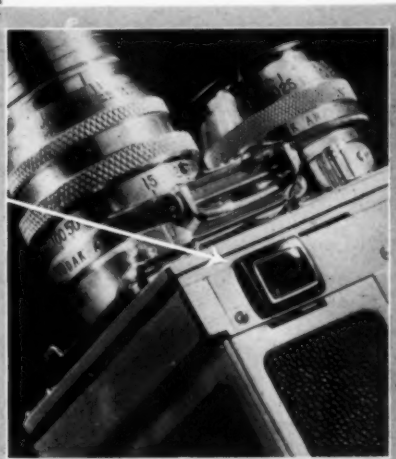

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16mm

# The A-B-C- of Outdoor Lighting

(Continued from Page 506)

Have one of them farther away than the other, so you won't get an absolutely flat light, but—just as in a well-lit interior— one side will be a little less brilliantly lighted than the other. Don't have your reflectors either too close, or too shiny, lest you get too hard a light. And watch your exposure! There is usually more danger of overexposure than of underexposure. And be sure to have a good, deep sunshade on your lens, and to see that the direct rays of the sun don't strike the glass elements of the lens. If all of this is carefully done, you'll have a very beautiful light effect.

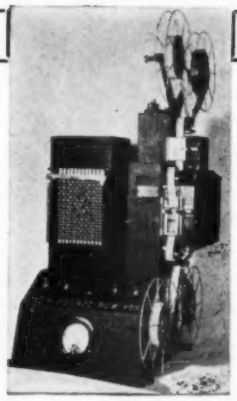
Figure 2 shows a cross-lighting. Place the subject so that the direct sunlight comes either from the right or the left, so that the sun strikes hard on one side. Then place a reflector on the opposite side, to throw a beam back into the shadow-side of the face. This is good in itself; but you can improve it with a second reflector. Place this as far behind the subject as is possible (and be sure it is out of the picture!) Catch the sunlight, and throw it onto the hair of the subject from behind—from the back of the head. Thus you will have a cross-light and backlight combined—a very nearly ideal outdoor lighting.

Suppose, however, that you are working in some deep shade—say on a porch, or in the shadow of a building. Reflectors will stand you in good stead here, too, in the form of what we call "pick-up" light. Reflectors—used either singly or in a series—will bring in sunlight to exactly where you want it. Simply catch the sun with your reflector, and play with it, throwing the beam here and there until it goes where you want it—exactly as a little boy plays with a mirror. Even one reflector will help in many cases; and, if necessary, you can follow professional practice, and throw the sunlight from one reflector to another, until it puts a spot of light where it is most needed. Fig. 3 will give you a good idea of how to do this.

Once you get accustomed to using reflectors, you will find that it is surprisingly easy to handle them accurately—and, like most professional cinematographers, you'll find that they will so greatly improve your work that it is hard to get on without them.

Here is another hint for exterior scenes. Often a long-shot looks very bare and empty, with nothing in the foreground, or nothing to "frame" the composition. Shots made through a branch with leaves or flowers are always attractive—so if there isn't any such branch actually available in your set-up, why not get one, and use it anyway? Carry a small branch with you, and then have somebody hold it in front of the camera while you shoot through or un-

16MM. 35MM.



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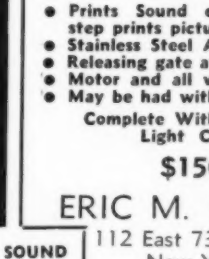

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der it. You'll get the same result as though the branch grew there!

Similarly, if you are forced to pose your subject against a brightly-lit wall, you can call on your little branch again: have it held or placed in such a way that the sun casts its shadow upon the wall—and your composition becomes much more pleasing.

It is simply through attention to such little details as these that professional cinematography has become so consistently pleasing—has become truly artistic. Do the same thing yourself: you'll be surprised how easy it is to improve your pictures, making the result more artistic—and incidentally awakening the envy of your co-amateurs!

## Nature Photography With Cine-Kodak

(Continued from Page 504)

(with slight modifications) for making titles, as well.

The question of magnification should be made clear. Ten inches is regarded as the conventional viewing distance at which magnification is unity. If we view an object at two inches, by the use of a magnifying lens, of course, the magnification as 10/2 or X5, and the lens meant for the purpose is designated as an X5 magnifier. Likewise, a one-inch viewing distance gives a magnification of X10. If the Cine-Kodak is fitted with a one-inch supplementary lens, the overall angular magnification is X10, even though the image on the film is the same size as the object. The usual 25mm Cine-Kodak lens (12.5mm for 8mm cameras) is assumed in this discussion.

As already mentioned, the Cine-Kodak lens is not designed to focus on objects closer than two feet. The supplementary lens is not only the simplest method of focusing for shorter distances, but it also has a decided advantage, since the indicated "F" aperture of the camera lens is still valid, even for very short distances. Thus, the same aperture setting is used for the photography of small objects as for distant objects, and Kodacolor photography is quite practical, provided the supplementary lens is large enough to avoid cutting off the marginal rays.

When the camera is focused for infinity, the focal length of the supplementary lens required is equal to the distance of the supplementary lens from the object to be photographed. This is independent of the focal length of the camera lens. The supplementary lens may be regarded as creating a virtual image of the object at infinity, for which the camera lens is focused. For object distances down to 8 inches, simple spectacle lenses of the Bausch & Lomb "Celex" double-convex type have proved satisfactory, even with Cine-Kodak lens-apertures of f:1.9. The theoretically preferable type is the plano-convex, with the plane side facing the object. For subject distances shorter than 8 inches, a camera lens of the required focal length should be used as a supplementary lens, and should be mounted with its back facing the object. Either cine or still-camera lenses of any focal length may be used; anastigmats are, of course, preferable.

The details of construction for such a frame are clearly shown in the illustration. Wooden construction is simpler, and quite satisfactory. The proper supplementary lens can be mounted easily with cellulose cement in the wooden upright, using a stepped circular hole made by an expansion bit. This lens is


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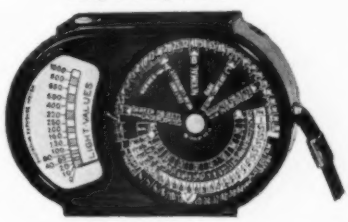

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There will also be many equipment prices. We expected to announce them this month, but the entire list has not been completed, but can tell you that it already contains such items as cameras, projectors and some sound equipment.

This $1,000 will be divided very simply. There will be a grand prize of $250.00 for the best all around picture. There will be from 10 to 15 prizes in the various classifications of $50.00 each. Even though you may not win the first prize you would have a chance at the $50.00 given for the best picture presented in the following classifications. Scenic, Travel Educational, Scenario, Home Movies, Kodacolor, Technical and any other classifications which might be brought forth by the entries made.

If you intend to enter this contest please send copy on this page so that we might send you official entry blank.

**Please send me one of your official entry blanks. I intend to enter a (16mm. 8mm 9½mm ) picture in your 1934 contest. . I understand my entry must be in your office not later than October 31, 1934.**

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mounted close to the camera lens, and so that its center is on the camera lens axis. A decentering error of 1/16 inch is not objectionable. The wire frame is not placed exactly at the plane of sharp focus, because it has been found impossible to surround all objects with the frame. It is therefore set 1¼ inches closer to the camera. Experience has shown that the estimation of the field position and limits offers no difficulty with this arrangement.

The frame is made of wire, ⅛ inch in diameter, and exceeds the field limit by about ¼ inch on all sides. The frame is bent so that its geometrical center is on the camera lens axis. If one side of the frame appears in preliminary pictures, the frame may be shifted or bent as required.

In order to attach the camera to the device, a hole is drilled in the wooden base permitting a ¼ inch machine screw to engage with the tripod bushing on the camera. This hole is so placed that the camera rests against two wooden guide blocks, to assure replacing it exactly. The blocks are placed as shown to permit easy winding and loading.

If desired, the supplementary lens mount may be hinged at the base, to be swung out of the way for distant photography, with which the frame does not interfere.

The fourth class of subject in nature photography—things examined through a magnifying-glass—can be photographed by means of a similar device, using, as mentioned above, camera lenses of 25mm or greater focus for supplementary lenses. The construction of this attachment is beyond most amateurs, but the required mounting may be easily made by any machinist. Especially when using cameras equipped with the f:1.9 Kodak Anastigmat lenses, the mount for the supplementary lens may be made in the form of a filter-cell, and the device fitted to the lens exactly the same way as the standard filters are fitted. The wire frame, of spring steel wire, is adjusted so that the image of a distant object, created by the supplementary lens alone, falls in the plane of the frame. A final adjustment is made with the attachment on the camera, photographing a pin in and near the plane of the frame, and adjusting the frame according to the result. Care must be taken to keep the subject in the frame, since the depth of focus is quite small.

## Backyard Movies

(Continued on Page 511)

and give you added pleasure in the making.

But remember: such a film should not be so much a display of film-technique of any sort as it should be a human document. This is where the genius (if any) of the photographer steps in!

OTIS WADE.

Los Angeles, Calif.

## Color and the Miniature Camera

(Continued from Page 505)

cies, slightly larger duplicates could be made by projection.

The next successful color process for the miniature camera to be considered is the 'two color' or DuPak process. By this process, transparencies or color prints can be made in any desired quantities. This process is also known as the Ives Polychrome Process. It is very satisfactory, not complicated, and yields surprisingly good results. It may be termed a 'two color' process with 'three color' results. There are two ways of making the 'two color' separation negatives. The first way is by the successive exposure method. Two exposures are made successively, one through the red 'A' filter and other through the green 'B' filter of the standard 'A-B-C' tri-color filter set. Such exposures are quite practical on subjects where there is no expected movement or light changes. Panchromatic film must be used.

The second method is by using DuPont DuPak film. This method permits the making of snapshots. The speed of the DuPak film is equivalent to that of DuPont Ortho film. By this bipack method, two films are loaded into the camera at the same time. They are placed emulsion to emulsion. The front film has an ortho emulsion with a red filter coating on top of it (this filter coating is removed after developing). The back film, in the bipack, is panchromatic. These two films are naturally exposed simultaneously, thus giving 'two color' separation negatives.

Color prints are made by making cyan-blue toned bromide prints from the red filtered negative (the back negative of the bipack). Upon these bromide prints and in proper register is cemented a dichroic red-to-yellow positive film made from the green filtered negative (front negative of the bipack). The combination of the print and film give the desired colors.. In a somewhat similar manner, transparencies may be made, a blue toned film replacing the blue toned bromide print. Transparencies may also be made on Belcolor Two Color Print Film. This is a greatly simplified means of making 'two color' transparencies. Technicolor (exception of the cartoon process) and Multicolor are 'two color' processes.

Another process that is adaptable to the miniature camera is the 'three color' separation process. These color separation negatives are made by photographing the subject through the standard 'A-B-C' tri-color filter set. It is obvious that the successive exposures made with these filters, must be of still objects or otherwise a color fringe will result. While this process is the ideal means of securing natural color photographs, the novice in color photography is not advised to try this process until he has some experience with the less complex color processes. Perhaps, the easiest method of employing the 'three color' process is to make transparencies from the separation negatives on Tricolor Belcolor Film. Prints and transparencies may also be made by Tricolor Carbro, Three Color Trichrome, Dyebro Color Process, and by the Pinatype Process.

Recently, in England, the Agfa Company in conjunction with the Leica organization announced a new color process. So far, it is strictly a projection process, employing a lenticulated film principle similar to 16mm Kodacolor. The advantage of the large Leica frame over the 16mm frame in a process like this one is apparent.

The film comes in 18 exposure, daylight loading spools. Special tricolor fil-

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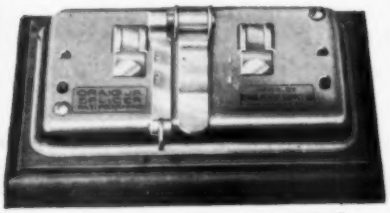

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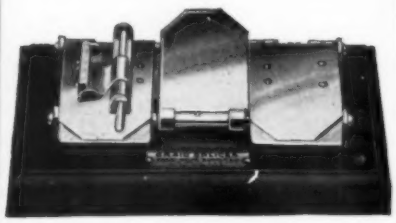

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ters are used for taking and projecting the film. A specially mounted f:1.9 Hektor lens is used for both photographing and projecting. With the color filter in place, the f:1.9 lens has an equivalent speed of an f:6.3 lens on superpan film. Pictures may be projected up to 3 or 4 feet. It will be a little while before this process will be available in this country.

Also, from England, comes information of the new Gasparcolour process. This process is based upon new color principles; as many as 40 British patents having been granted to it. It is of a revolutionary nature in that color prints are made as easily as are black and white prints. This process has not made its appearance upon the market as yet. When it does, it is hoped that it will bear out the enthusiastic claims of those who have seen prints made by this process.

Without a doubt great strides will be made in color photography within the next few years. You may well expect that these new developments will be applicable to the lucrative, miniature camera field.

For those who wish more comprehensive information on the processes described in this article, you may refer to the following sources:

FILMCOLOR, The R. J. Fitzsimons Corp., 75 Fifth Ave., New York City.

DUPONT DUPAK and the IVES POLYCHROME PROCESS, DuPont Film Mfg. Corp., 35 West 45th St., New York City; The Camera Magazine, Philadelphia, Jan. '33 issue and subsequent issues; Wm. H. Derr, 2253 N. Franklin Ave., Philadelphia, Penn.

TRICOLOR CARBRO, THREE COLOR TRICHROME, DYEBRO, TWO and THREE COLOR BELCOLOR PRINT FILM, George Murphy, 57 East 9th St., New York City.

PINATYPE PROCESS, H. A. Metz and Co., 122 Hudson St., New York City.

GASPARCOLOUR PROCESS, The British Journal of Photography, Aug. 4, Oct. 6, Nov. 3, 1933.


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**"The Pioneer 16mm 'Sound-on-Film' Picture Producer"**

P. C. S.


## Have You a Watchmaker in Your Home?

(Continued on Page 509)

Scene 21. Medium-shot. Having no luck with the chisel, Junior sets it down and tries the hammer.

Scene 22. Close-up of Junior (Bighead). He registers intense enjoyment.

Scene 23. Close-up of watch, with hammer beating down upon it. If you wish, you can make this more effective by making a series of short flashes—about six inches per flash—of this action, taken from different angles.

Scene 24. Close shot of watch. After a hammer-stroke, the back cover flies off, and a spring, etc., shoot out.

Scene 25. Medium close shot of Junior. He starts back in surprise, and topples over.

Scene 26. Close-up of Rover, barking excitedly.

Scene 27. Long-shot. Pan camera from Junior over to Father and the car.

Scene 28. Close shot of car. Father crawls out, covered with grease, but satisfied. He walks over to a hydrant and washes the grease from his hands.

Scene 29. Medium long-shot. Father returns to the car, rolling down his sleeves. His face is still dirty, but he smiles contentedly.

Scene 30. Close shot, beside car. Father walks into the picture, and reaches down for his watch—it isn't there; surprised, he hunts for it.

Scene 31. Close-up of Rover—still barking.

Scene 32. Close-up of Father. He hears, and it dawns on him that there may be some connection with the missing watch.

Scene 33. Medium long-shot of Junior. His back is to the camera, and the hammer in his right hand rises and falls regularly.

Scene 34. Close shot of Father. He starts to run toward Junior, coming straight into the camera.

Scene 35. Over Junior's shoulder; close shot of the wrecked watch. Suddenly Father's hand shoots down and snatches the watch.

Scene 36. Close shot (head and shoulders) of Father, holding the watch up, and speaking—angrily and fluently.

TITLE: "ZQXXzzzz&%jjjpQ!!!!???!!z!"

Run this for about six inches, and then slide over it a card bearing—in big letters:

CENSORED!

Scene 37. Medium-shot of Junior and Rover. Junior looks frightened, puts his

hands over his ears, and tries to slip away quietly.

Scene 38. Long-shot. Father is in the foreground, holding his watch and still talking. In the background, Junior and Rover tiptoe away around the corner of the garage. Junior still has his hands over his ears.

FADE OUT.

THE END.

As we have suggested, the only important "prop" you will need for this picture is the watch—a dollar wristwatch. For the last few scenes, the more completely wrecked it is, the better the effect. The tools, etc., can be found in every home, and you can improvise the "parts" called for in Scene 9 from the junk that accumulates around any garage. If necessary, the titles can be eliminated, but the film will naturally be better if you use them.

# Cine Synthesis

(Continued from Page 508)

the screen results will be jerky. When you have made 32 frames of the letters "jumbled," take 16 exposures of the letters as they move toward the positions they will assume in spelling the title. After the letters spell the title, flick the camera button 32 exposures more and the title is made.

A word now about flicking the camera button to make single exposures. Most amateur cameras are spring-driven, with a lever or button to allow the mechanism to function when depressed. On some cameras the spring which holds the release button in the non-operating position is rather stiff; in others the action is not quite so strong. It will be found that the stronger the spring on this release lever the more difficult it is to flick the release lever quickly enough to allow the camera to expose only one frame because of the pheomena of muscular reaction. For this reason, I would advise you to make for yourself, or purchase ready-made, an electrical solenoid device to operate the camera release lever. Then, an electrical pushbutton having a very soft spring can be touched and released very quickly by the operator's finger.

Some amateur cameras are equipped with an auxiliary button which allows the camera to expose one frame at a time automatically. I have known of some amateurs who own a camera of this type to use the electrical control in preference to the single frame button on the camera—perhaps because the pushbutton could be placed at a more convenient point. At any rate, bear in mind that for the best results, make your animated movies with some system which you may depend upon to expose just one frame at a time.

The titling frame or rack which an amateur selects for making animated titles or other animated movies is perhaps best made in such a manner that the title board is in a horizontal plane. Especially is this design convenient if the amateur plans to make animated cartoons. The size of the title area should be large enough so that fine line work is not necessary and yet not so large that the materials become expensive. A title area of about 7 by 9½ inches should be about right. On the surface carrying the title itself some method should be devised for definitely locating the title with respect to the camera. Then, by using a sketch board having similar locating facilities, perfect registration will result.

By all means make the titling frame of strong substantial materials and design it "heavy." A flimsy frame will allow the relation between title and camera to change during the filming, and the screen result of the animated movie will be irritatingly jerky.

In building your animating titler allow provisions for accurately adjusting the distance between the camera and the title. While most amateur cine lenses will not focus more closely than 24 inches, this provision will undoubtedly prove convenient and farsighted in the event that at some time in the future the amateur will decide to equip his lenses with spacing shims so that closer work can be filmed. The titler shown in the picture accompanying this article can be calibrated for almost every amateur cine camera and the same frame used for any or all such cameras. Incidentally, "moving camera" shots of titles or cartoons are quickly and simply made by moving the camera up or down definite intervals while making the single frame exposures.

Titles or cartoons may be drawn on paper or some transparent material While a bit more expensive initially, transparent materials for this purpose are to be preferred. Perhaps the least expensive material is 0.005 inch thick, and the safest is made of cellulose acetate, the same material which is the base of amateur safety film. Cellulose nitrate is more inflammable, and for the sake of safety, I would not advise its use. Acetate stock is only slightly more expensive than nitrate base stock, so why take chances.

The acetate base sheet will be found to lend itself admirably to the making of titles as well as cartoons because they may be washed clean of the ink and used repeatedly, a water-dampened rag


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will remove all traces of drawing ink or showcard colors. If difficulty is experienced in applying the ink or showcard color to the sheet, it is probably because of grease on the sheet; a cloth or bit of cotton saturated with ordinary rubbing alcohol will remove this grease. The title may be drawn or printed with a brush or Speedball pen; if you use a pen make sure that the point has no burrs or sharp corners to scratch the acetate sheet?

As to the film which the amateur may use for making titles or animated movies, 8mm enthusiasts at the present time have only regular panchromatic reversal. In the 16mm field, four different types of film are available, each of which will be found to have its own niche. If only occasional titles are made, they may be made on the unused ends of regular panchromatic or superpan reversal with which the camera may be loaded. If the amateur has a number of titles and wants to have them screen black where his title is drawn black, and vice versa, the less expensive orthochromatic reversal films on the market are quite good. At slightly less cost than this, if the amateur does not mind the making of titles reverse in color rendition to that desired on the screen, he may make his titles on positive stock and develop it himself. This film will perhaps give blacker blacks than any other, if such a condition is desired. And finally, Kodacolor may be used to make colored titles and animations.

In this article it has been the object of the writer to describe methods and apparatus for the making of titles and animation. In the next article, CINE-TRICKS, unusual effects obtainable in animation and titles will be discussed, as well as cine tricks which may be made in the field.

In closing, it has occured to the writer that dimensioned drawings of the titler shown and described here would be desirable to my readers. With this in mind, a quantity of prints have been made of a drawing I have prepared, showing the construction and assembly details of the titler. The sheet, 22 by 34 inches, is available at cost. Merely send fifty cents for the plan and it will be sent immediately. Address either the American Cinematographer or myself.

# Show It With Music !

(Continued from Page 507)

more than corresponding domestic ones. They are, however, well worth the extra cost and trouble, for they add variety, and help one to avoid the more hackneyed selections usually available.

It would be almost impossible to give, in the limited space here available, a complete list of recorded music suitable for scoring home movies; but a brief outline of the more important thematic classifications, and appropriate selections, follows:

**Battles, Riots, Excitement—**

"Ruy Blas Overture" (Mendelsohn).
"Ride of the Valyries" (Wagner).
"Flying Dutchman Overture" (Wagner).

**Ballet—**

(Also adaptable to much general action of a light nature)
"Dance of the Hours" (Ponchielli).
"Faust Ballet Music" (Gounod).
"Ballet Music from 'Hamlet' " (Thomas).
Fantasy from "Coppelia Ballet" (Delibes).
"A La Gavotte" and "A La Minuet" (Herman Finck).

**Carnivals, Joy, Eetc.—**

"Carneval Overture" (Dvorak).
"Bank Holiday" from the "Cockney Suite" (Ketelbey).

**Death Scenes—**

"Largo," from the "New World Symphony" (Dvorak).
"Chanson Triste" (Tschaikowsky).
"Death of Ase" from "Peer Gynt Suite, No. 1" (Greig).

**Dramatic Scenes—**

"Les Preludes" ("Symphonic Poem No. 3") (Liszt).
Fantasies from "La Traviata" (Verdi).

**Fires, Gales, Etc.—**

"Fire Music from Siegfried" (Wager).

**Love Scenes—**

These scenes require music which is predominantly in the string section of the orchestra; or violin or 'cello solos.
"Simple Aveu" (Thome).
"A Little Love, A Little Kiss" (Ross-Silesu).
"Coeur Brise" (Gillet).
"Londonderry Air" (Traditional Irish).
"Serenade" (Tosselli).
"Zigeunerweisen" (Sab-Sarasate).
"Gern Hab' Ich die Frauen Gekusst" (Lehar).

**Oriental, Eastern, Etc.—**

(When bona-fide Eastern music is not wanted, but when some definitely atmospheric music is needed).
"In A Chinese Temple Garden" (Ketelbey).
"In A Persian Market" (Ketelbey).
"In the Mystic Land of Egypt" (Ketelbey).
"Japanese Sunset" (Deppen).
"Chinese Lullaby" (Bowers).
"Japanese Lantern Dance" (Yoshimoto).
"Indian Love Lyrics" (Woodford-Finden).

# HERE'S HOW

## by A. S. C. Members

**FILTERS IN FOG. "What is the most suitable filter for shooting in a fairly thick mist or fog, but with the sun fairly bright at the same time? If there were no fog at all, about f:8 with SuperPan film at sound speed would be correct exposure. Has any allowance to be made for the fog, or should only the filter-factor be taken into account?" R.C.R., Calcutta, India.**

In a heavy fog, no filter will be of any appreciable benefit. ..If the fog is light, you may derive some benefit by using either an Aero 2 or a "G" filter (preferably the latter) as they have pronounced haze-cutting qualities. When photographing through a fog, the usual rule of exposure applies—"Expose for the shadows, and the highlights will take care of themselves." In this instance, expose for whatever details you can see and wish to show; if you are using a filter, you must naturally allow for the filter-factor. Often, by the way, a light fog will prove deceptive, offering more obstruction to the eye than to lens and film.—Ned Van Buren, A.S.C.

**TANK DEVELOPER....."I require a good tank developing formula, such as is used in the studios, taking about 15 minutes to develop at about 65 degrees F." R.C.R., Calcutta, India.**

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| Hydroquinone | 290 grains | 5 lbs. |
| Borax | 120 grains | 2 lbs. |
| Water to | 1 gal. | 120 gals. |

Average development time for motion picture type negatives on Panchromatic or SuperPan films: 9 minutes at 65 degrees F. At half strength the same contrast would be obtained in about 15 minutes at the same temperature. We would advise you to experiment, so that you may determine the right dilution and developing-time to produce exactly the type of negative you wish. Used full strength, for instance, with development carried to 15 minutes, would give you a negative of much greater density and contrast than is general among the Hollywood studios. Differences in the water-supply also have some noticeable bearing upon the action of the solutions.—Emery Huse, A.S.C.

**MISSING SCENES IN 8mm ROLLS. "In several of the more recent rolls of 8mm film that I have shot, I have found that several scenes—usually at the beginning, middle, and end of the roll—were missing. How does this happen?"—M.M.M., Boston.**

In all probability, you have photographed these scenes on the opaque film leader supplied for threading your camera. The Eastman Kodak people inform us that at each end of each roll of 8mm film, about 4 feet of leader is spliced. This is generally fogged in the loading, so it is removed before developing the roll. We suggest, therefore, that if you will run off two or three feet of film each time you thread your camera (that is, when starting a roll, and after reversing the spools midway through the roll) you will avoid any loss such as you suggest.—Arthur C. Miller, A.S.C.

**CHARIOTS AND SHOOTING. "How was the chariot-race film made in "Roman Scandals," with Eddie Cantor at the 'wheel'? And how are the very realistic scenes made which apparently represent the shooting through the glass of enclosed automobiles—generally without even feigned injury to the occupants? If you will answer these queries, you will place an appreciative subscriber under further obligations."—P.W.A.F., Detroit.**

A few of the close shots of Eddie Cantor driving the chariot were made direct, with the camera—fitted with a telephoto lens—mounted on a camera car which kept pace with the chariot. The majority of scenes, however, were made by the trick method variously called the "Transparency" or "Projected Background" process. In this, a film representing any desired background is projected (from behind) upon a large translucent screen placed behind the actor. The projector and camera are electrically synchronized, so that the two shutters open and close together, and the projected background picture is photographed as an actual, moving background to the real action in the foreground. In this particular instance, the background was a film showing the road as it would be seen if one was looking straight back from the chariot, with the other chariot approaching from behind. Mr. Cantor was then placed in front of the process-screen, in a chariot, and went

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## Here's How

through his action, dialog, etc., as the background was projected on the screen behind him. The result—as you saw—showed Eddie driving madly along in his chariot, with the other chariot creeping up in the distance. The result was perfectly effective, and much easier to make—and less costly—than would have been possible otherwise.

As to the shooting: non-shattering glass is, of course, used. Sometimes, the bullet-holes are made by planting small charges in the glass, and firing them electrically, through very fine, black wires. But in most cases, these holes are made by REAL bullets, actually fired through the glass by special sharpshooters. There are several men here in Hollywood who make their living as gunnery experts—some of them specialize in trick revolver-shots, some are rifle-marksmen, and two or three machine-gun specialists—all of whom can be absolutely depended on to place a bullet exactly where the director wants it, without the slightest danger to anyone on the set. Most of these marksmen are war veterans. A few of the old Western stars, such as Tom Mix, were able to do such fancy shooting themselves.

—John W. Boyle, A.S.C.

## New Manual on Home Movies

"Movie Making Made Easy," by William J. Shannon, has just been published by Moorfield and Shannon, of Nutley, N. J. It is an excellent, though condensed, review of the elements of home-movie making. Its chief fault lies in the fact that the author has tried to appeal to both the beginner and the more advanced worker in a single short volume. In consequence, he has to cover a great deal of material in a relatively short space, which forces him to condense everything, and to slight several important details. His discussion of filters and filtering, for example, is so condensed as to be misleading to the novice, and much too elementary for the advanced worker. However, there are several chapters of real value—especially those on the organization of clubs and club-productions, the making of titles and titlers, animated cartooning, aerial and animated cinematography, and the concluding chapter of helpful hints.

## Show It With Music!

"Egyptian Suite—African Motives" (Benno Bardi).

**Nature—Rustic Scenes; Scenic Films—**

"Summer Days Suite" (Coates).
"Peer Gynt Suite—Morning" (Greig).
"Fruhlingsrauschen" (Sinding).
"Shepherd's Hey" (Grainger).
"Siegfried—Forest Murmurs" (Wagner).
"Three Fanciful Etchings" (Ketelbey).
"In Fairy Realm" (Ketelbey).
"In A Camp of the Ancient Britons" (Ketelbey).
"Swallows of Austria" (J. Strauss).
"Tales from the Vienna Woods" (J. Strauss).

This list can be extended indefinitely, and include virtually every type of music.

**Professions—**

"Aida—Grand March" (Verdi).
"Merchant of Venice—Doge's March" (Rosse).
"Cockney Suite: State Procession" (Ketelbey).

**Religious—Church Scenes, Etc.—**

"Ave Maria" (Bach-Gounod).
"In A Monastery Garden" (Ketelbey).

**Storms—**

"Flying Dutchman Oevtrure" (Wagner).
"The Storm" (Pattman).

**Tragic Scenes—**

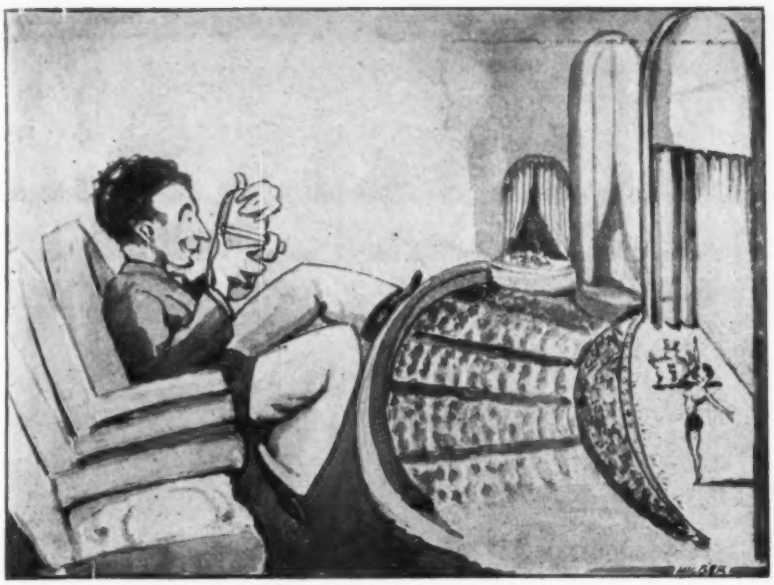
"Cockney Suite—Elegy" (Ketelbey).
"New World Symphony" (Dvorak).

**Weird, Mysterious—**

"Fantastic Symphony" (Berlioz).

Naturally, many intermediate classifications not mentioned here permit the use of many other types of music: comedies can often be used with up-to-date dance music; news subjects with military marches; while travel-films and home-movies allow the use of many beautiful and interesting compositions covering a wide range of moods. The starting point for anyone interested in building up a home scoring library is obviously to eliminate all classifications except those covering his own immediate range of films, thereafter adding records as his films may require. It should also be mentioned that a wide variety of recorded sound-effects are available—shots, sirens, airplanes, doors closing, etc.

Before showing a picture with music, a cue-sheet should be prepared, showing what music to use for each scene, when to change records, etc. If properly rehearsed and performed, such music can vastly improve the effect of home showings of any type of picture.



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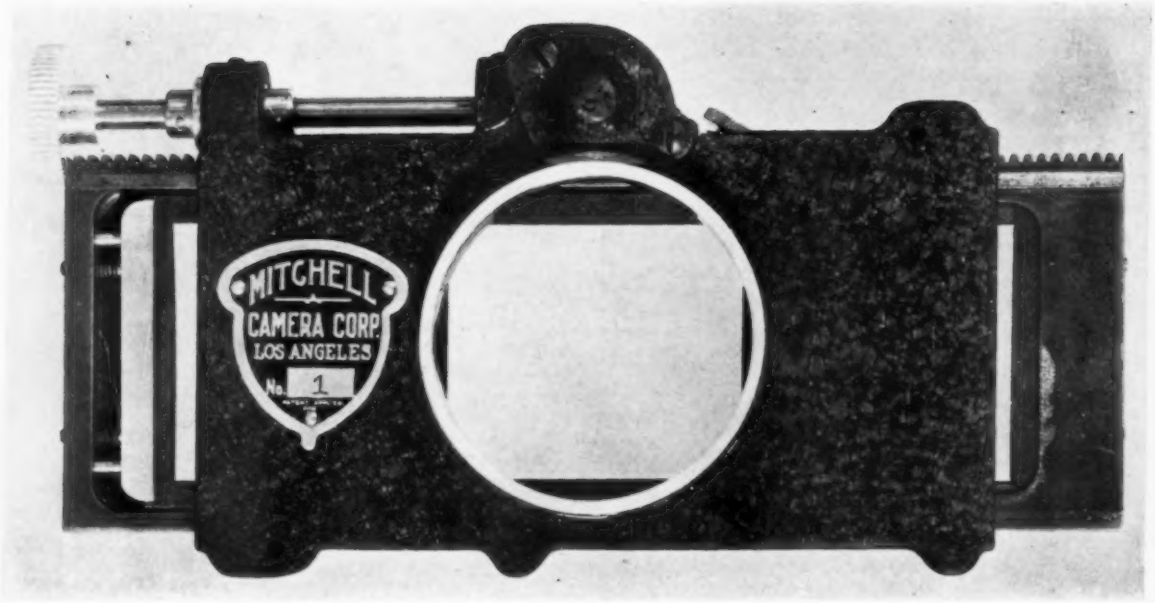


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